DOCUMENT RESUME

ED 398 441 CE 072 332

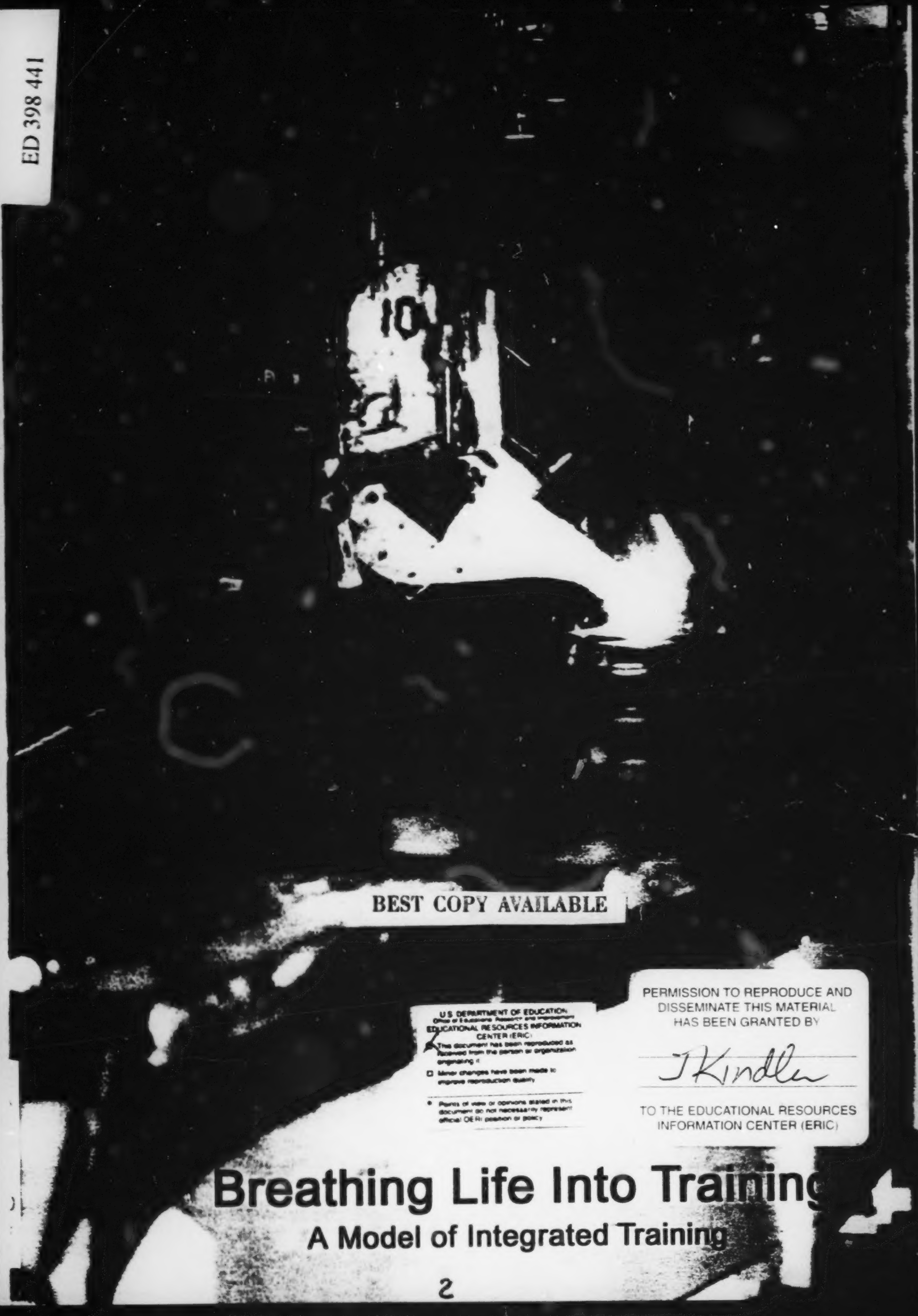
AUTHOR	Sefton, Robin, Ed.; And Others
TITLE	Breathing Life into Training: A Model of Integrated Training.
INSTITUTION	National Automotive Industry Training Board, Doncaster (Australia).
SPONS AGENCY	Australian Dept. of Employment, Education and Training, Canberra.
REPORT NO	ISBN-0-646-20569-2
PUB DATE	Sep 94
NOTE	350p.
PUB TYPE	Reports - Research/Technical (143) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC14 Plus Postage.
DESCRIPTORS	Adult Basic Education; Adult Education; Case Studies; Certification; Foreign Countries; *Integrated Curriculum; *Literacy Education; Mainstreaming; Models; Pilot Projects; Tables (Data); *Trade and Industrial Education; Training Methods; Training Objectives; *Workplace Literacy
IDENTIFIERS	*Australia; *Automobile Industry; Vehicle Industry Certificate (Australia)

ABSTRACT

A model of integrated training within the context of Australia's vehicle industry certificate (VIC) was developed, tested, and evaluated through six different pilot programs in different enterprises across Australia's automotive industry. The pilot programs' primary objective was to provide access to and ensure successful participation in mainstream VIC classes. The new training model was based on the philosophy that training should harness employees' existing skills and potential, utilize the work force's linguistic and cultural diversity as a positive advantage, use a holistic approach to facilitate learning as a catalyst for workplace change, be inclusive, and provide a method for contextualizing the VIC at individual enterprises. An action research approach was devised to develop and test the integrated training model, which integrates the following key competencies into the nine units of the foundry elective in a manner customized to meet the needs of individual automotive enterprises: collecting/analyzing/organizing information; communicating ideas/information; planning/organizing activities; working with others/teams; using mathematical ideas/techniques; solving problems; and using technologies. The case studies confirmed the effectiveness of the integrated training model and resulted in 17 recommendations regarding training in Australia's automotive industry. (Thirty tables/figures and 182 references are included.) (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 398 441



BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY

J Kindler

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

Breathing Life Into Training

A Model of Integrated Training

Breathing Life Into Training

A Model of Integrated Training

Edited by

Robin Sefton
Peter Waterhouse
Rosemary Deakin

NAITB

National Automotive Industry Training Board
September 1994

This action research project was undertaken by the ***National Automotive Language and Literacy Coordination Unit*** (NALLCU) under the auspices of the ***National Automotive Industry Training Board*** (NAITB), with funding from the ***Workplace English Language and Literacy*** (WELL) ***Program*, *Department of Employment, Education and Training*** (DEET).

Breathing Life Into Training A Model of Integrated Training

First published in September 1994 by the National Automotive Industry Training Board (NAITB) with funding from the Department of Employment, Education and Training (DEET) through the Workplace English Language and Literacy (WELL) Program.

© Commonwealth of Australia, 1994

This work is copyright. Company documents within the report may not be reproduced without permission from the relevant companies. The rest of the report may be reproduced in whole or in part for study or training purposes subject to the inclusion of an acknowledgement of the source and no commercial usage or sale. Reproduction for purposes other than those indicated above, requires the written permission of the Commonwealth.

ISBN 0 646 20569 2

Editors: Robin Sefton, Peter Waterhouse and Rosemary Deakin

Authors: The case studies were prepared collaboratively, and through negotiation of several drafts with the stakeholders in the project. However, particular individuals had responsibility for specific sections. Authors include:

Richard Cooney
Julie Hawkey
Jane Sims
Lynn Wallace-Clancy
Rosemary Deakin
Toni Roberts
Phillipa Thomas-Walsh
Ann Eller
Robin Sefton
Peter Waterhouse

Desktop Publishing: Helen Kalcovski

Produced & Distributed by:

NAITB
Level 2, 651 Doncaster Road
Doncaster VIC 3108
Telephone: (03) 848 8300
Facsimile: (03) 848 8934

Printed by:

New Generation Print & Copy
132 Victoria Street
Brunswick East 3057

Cover photograph: Pouring iron alloy castings at Holden's Engine Company Foundry, reprinted with permission.

> *Creating a workplace learning culture which values the diversity, potential and involvement of employees is fundamental to developing a capacity for change in the workplace.*
>
> **Rosemary Deakin**

Acronyms

ACTRAC	-	Australian Committee for Training Curriculum
AFMEU	-	Automotive, Food, Metals & Engineering Union
AGPS	-	Australian Government Printing Service
AIA	-	Automotive Industry Authority
ALBSAC	-	Adult Literacy & Basic Skills Action Coalition
ALLP	-	Australian Language & Literacy Policy
AMES	-	Adult Migrant Education Service
AMPAG	-	Automotive Manufacturers' Parts and Accessories Group
DEET	-	Department of Employment, Education and Training
EEO	-	Equal Employment Opportunity
ESB	-	English Speaking Background
ESL	-	English as a Second Language
EWP	-	English in the Workplace
GMHAL	-	General Motors - Holden's Australia Ltd
HEC	-	Holden's Engine Company
HR	-	Human Resources
ILC	-	Independent Learning Centre
ISO	-	International Standards Organisation
JCS	-	Job Certification Sheet
JIT	-	Just-In-Time
KYT	-	Danger Prediction Training
LNA	-	Learning Needs Assessment
LOTE	-	Languages Other Than English
MC	-	Mitsubishi Corporation
MMAL	-	Mitsubishi Motors Australia Ltd
MMC	-	Mitsubishi Motors Corporation
MRP2	-	Materials Requirements Planning (Model 2)
NAITB	-	National Automotive Industry Training Board
NALLCU	-	National Automotive Language and Literacy Coordination Unit
NAPS	-	Nissan Automotive Parts System
NESB	-	Non-English Speaking Background
NISCOM	-	Nissan Communication System
NML	-	Nissan Motor Company Limited
NPDC	-	National Parts Distribution Centre
NPL	-	Neurolinguistic Programming
OHS	-	Occupational Health and Safety
PMV	-	Passenger Motor Vehicle
QA	-	Quality Assurance
RMIT	-	Royal Melbourne Institute of Technology
ROS	-	Requisition On Sample
RPL	-	Recognition of Prior Learning
SPH	-	Strokes Per Hour
TAFE	-	Technical and Further Education
TM	-	Team Member
TMCA	-	Toyota Motor Corporation Australia
VAITB	-	Victorian Automotive Industry Training Board
VCE	-	Victorian Certificate of Education
VIC	-	Vehicle Industry Certificate
WELL	-	Workplace English Language and Literacy (Program)
WES	-	Workplace Education Service

Table of Contents

Page No.

Acronyms 2

List of Tables 6

List of Figures 6

1. Executive Summary 7

2. Introduction 13

3. Background and Rationale for the Project 22

4. Theoretical Perspectives 32

5. Methodology 46

6. Implementation of the Project 55

7. Foundry Elective: A Case Study of Integrated Training at Holden's Engine Company (HEC) 65

8. Warehousing Elective at Ford National Parts Distribution Centre 130

9. Workbooks for Workplace Learning at Mercedes-Benz (Australia) Pty. Ltd., Mulgrave. 163

10. Consulting for Curriculum Development at Mitsubishi Motors, Adelaide 184

11. Integrated Training at Nissan National Parts Distribution Centre (NPDC), Dandenong, Victoria 198

12. Team Member Two Training at Toyota Press Plant, Altona. 241

13. Results of the Projects 275

14. Responding to Learning and Curriculum Issues 287

15. Issues, Implications and Recommendations 315

Acknowledgements 329

References 335

List of Tables

Page No.

1. Timelines for Projects 56
2. Integration of Key Competencies into Foundry Elective 81
3. HEC Foundry Elective: Training Matrix 82
4. Current Workforce at Ford NPDC 134
5. Curriculum Structure 138
6. Topic Changes in VIC Syllabus 139
7. Warehouse Workforce 140
8. Participants in Pilot Program 140
9. Nissan NPDC - VIC Pilot Program Training Matrix 208
10. Level 2 Entry 254
11. Level 2 pay Point 1 255
12. Integrated Thematic Units - Level 2 255
13. Training matrix: Integrated TM2 Training Module Press Plant Pilot Program 256
14. People Who Contributed to Curriculum Development 281
15. Diversity of Ethnic Background in Pilot Projects 288

List of Figures

1. Integrated Training and the Workplace Reform Agenda 16
2. A Collaborative Process of Continuous Improvement in Training 27
3. Integrated Model in the Context of Accredited Training 29
4. Locating the Elective within the Bigger Picture 76
5. Conceptual framework for Foundry Elective 80
6. Flow of Operations 137
7. Local Receiving - Process 143
8. Customising the VIC 203
9. Overview of the Production Process 204
10. Chain of Customers 212
11. Trainees' Analysis - Draft Flow Chart of Dealership P&A Movement 215
12. Trainees' Analysis - Dealership P&A Department Problems 216
13. Trainees' Analysis - Draft Flow Chart of Dealership P&A Movement 224
14. Contextualising and Integrating key Elements of Organisation 299
15. From Generic Curriculum to Specific Programs - Integrated Model 308

Chapter 1
Executive Summary

This project was funded by the Workplace English Language and Literacy (WELL) Program and conducted by the National Automotive Language and Literacy Coordination Unit (NALLCU) during 1993 and the early part of 1994.

1.1 Aim

The aim of the project was to develop, trial and evaluate a model of integrated training within the context of the Vehicle Industry Certificate (VIC) through six pilot programs in different enterprises across the industry. The pilot programs were concerned primarily with providing access to and successful participation in mainstream VIC classes and were based on a philosophy that training should:

- harness the existing skills and potential of employees;
- utilise the linguistic and cultural diversity of the workforce as a positive advantage;
- employ an holistic approach to the development of workplace competence;
- facilitate learning which acts as a catalyst for workplace change;
- be inclusive of all non-trades employees;
- provide the method for contextualising the VIC in each enterprise.

1.2 Background

This project was conducted in the vehicle manufacturing sector of the automotive industry at a time of massive restructure and industry change. The need for international competitiveness was well recognised and government plans for the industry included reductions in tariffs and rationalisation of the industry.

The need for training for all sectors of the workforce had led to the development of a TAFE-accredited Vehicle Industry Certificate (VIC) targeted to non-trades vehicle builders. This course had been accredited and was being implemented in a number of companies nationally when this project started. A number of teething problems were emerging, not the least of which was the issue of how best to respond to the literacy, English language and numeracy levels of employees.

1.3 Rationale

The project arose from a proposal that a model of training, which integrated key elements of the training, would provide a more effective strategy for addressing not only the literacy and language issues, but also other issues of workplace reform.

The integrated model uses the curriculum framework of the VIC, customised to an enterprise, stream-specific course, which takes account of elements of organisation, stages in production/processes of the plant and industry, enterprise-specific and key competencies. The parallel educational framework takes an holistic perspective of concepts, values and strategies. These form the basis for an educational praxis which focuses on language usage in its broad social context.

1.4 Theoretical Perspectives

Whilst the model developed by NALLCU emerged from practice in the field, it can be supported by theoretical perspectives drawn from a wide body of literature in the fields of education, training, socio-linguistics and change management. These include literature in areas of:

- collaborative negotiated curriculum;
- inclusive curriculum;
- assessment;
- conceptions of literacy;
- active, experiential and enquiry-based learning;
- whole language and an holistic perspective;
- peer and group learning;
- managing change.

1.5 Terminology:

1. **A model of integrated training:** The term "model" is used to represent the practical, ethical, innovative and thoughtful combination of:

    - a conceptual framework (or set of ideas) on learning, language, workplace change and so on; with
    - a set of strategies for action and implementation; and
    - a set of principles on workplace learning

2. **Integrated Training:** In this report integrated training is defined as training which is based on those elements which are integral to the training context. These elements include such factors as:

    - Organisational and technical systems
    - Key Competencies
    - The technical language and "lingua franca" of the workplace;
    - Cultural factors;
    - The social, political and industrial parameters and constraints affecting the workplace including change initiatives;
    - Access and equity issues;
    - Existing skills and potential of employees.

1.6 Methodology

The methodology adopted was one of action research and an effort was made to ensure that all elements of the project were well documented, with a case study being developed for each of the six pilot programs. An integral part of the process was the conducting of interviews with the various stakeholders to incorporate a qualitative response to the programs. Each case study was then negotiated with the companies and the stakeholders to ensure that it represented a fair summary of the project.

1.5 Implementing the Project

After fairly extensive negotiations with different enterprises, the projects that were finally conducted were:

- Foundry Elective at Holden's Engine Company (HEC);
- Warehousing Elective at Ford National Parts Distribution Centre (NPDC);
- The first part (Air Systems) of post-induction training for the VIC (skills, knowledge and elective units across three levels) in Truck & Bus Assembly at Mercedes-Benz;
- The first part of an integrated program for the VIC targeted to the Hardware Manufacturing area of Mitsubishi;
- The first part of an integrated program (knowledge and elective units) for the VIC at Nissan National Parts Distribution Centre (NPDC);
- Level 2 modules of the VIC for the Press Shop at Toyota Altona.

The application of the model required project officers skilled at operating with integrity in a complex environment. The case studies illustrate that they were able to meet the demands of the workplace and to maintain the collaborative processes of program development and implementation that were essential to its success. The innovative nature of the project, and the recognition of the demands that this placed on project officers, led to a strategy of project management which provided a support structure in each enterprise. This included:

- establishing a project steering committee at each site to monitor and guide the project and support the project officer;
- negotiating an agreed project brief in each enterprise;
- maintaining central management representation on local steering committees to deal with issues as they arose;
- attempting to ensure the existence of an enterprise agreement that covered the pilot project.

By bringing the programs close to the day-to-day experience of employees it was possible to build on existing skills, attributes and abilities in a largely experiential learning program. As illustrated in the case studies, this enhanced the development of language, literacy and numeracy skills of employees as well as covering the accredited VIC course within the syllabus time frame. A collaborative approach to the tasks of designing, developing, implementing and evaluating the curriculum ensured that the effects of programs permeated the plant and involved large numbers of people. This created a high level of local ownership of the outcomes of training, provided on-going support for program participants and assisted with the process of continuous improvement in the workplace.

1.7 Conclusions

The project has demonstrated an effective way of addressing barriers to access and successful participation in training. In particular the integrated model has shown that literacy, English language and numeracy skills can be effectively developed in the context of mainstream VIC classes, provided that the training is relevant, specific to the workplace and dynamic. It has also confirmed that the integrated model has the capacity to address the workplace reform agenda in a meaningful way. Thus it has been possible to meet the demands of production managers for continuous improvement whilst also providing the career structure and portability of training desired by employees.

1.8 Recommendations

1. That accredited training in the vehicle manufacturing industry:

    1.1 be developed and continuously improved by the industry stakeholders at plant and enterprise levels through processes of active collaboration and involvement.

    1.2 draw upon the technical and functional knowledge and expertise of the workplace to develop inclusive curriculum and appropriate learning materials and assessment tasks.

    1.3 value, build upon and extend the experience, skills, ability and potential of the employees.

2. That training providers ensure that their curriculum personnel are skilled in and committed to facilitating collaborative processes which result in appropriate enterprise specific curriculum.

3. That funding authorities direct resources towards supporting the industry and enterprises in the collaborative processes of developing appropriate and contextualised curriculum and workplace learning.

4. That training providers use qualitative methods to review and evaluate the effect of training initiatives in terms of their impact on learners and the workplace.

5. That accredited training in the vehicle manufacturing industry:

    5.1 be based upon, and designed to extend the authentic language, literacy and communication practices of the particular plant/enterprise.

    5.2 utilise the linguistic and cultural diversity of the workforce as a positive advantage.

6. That accredited training in the vehicle manufacturing industry be enterprise/plant specific and fully contextualised to take account of the particular activities, needs and goals of employees and the workplace.

7. That accredited training in the vehicle manufacturing industry:

    7.1 reflect a systemic and holistic view of the learner, the learning process and the workplace in its broader social and industry contexts.

    7.2 emphasise the development of key competencies including: analytical, reflective, systemic and creative thinking and strategic competence to facilitate active participation in continuous improvement and workplace change.

8. That training providers develop strategies to address the need for flexible workplace learning through collaborative program development processes which ensure curriculum is contextualised and relevant to the stakeholders at the plant/enterprise level.

9. That trainee performance in accredited training is assessed in terms of meaningful and holistic performance criteria which are relevant to the particular workplace context, its language and culture.

10. That funding and accreditation authorities promote flexible workplace learning through curriculum guidelines and development processes which promote collaborative development and contextualisation at the plant/enterprise level.

11. That accredited training in the vehicle manufacturing industry promote access and equity through learning groups which reflect the social and organisational reality of the workplace (e.g. mixed ability, multi-ethnic groups).

12. That accredited training in the vehicle manufacturing industry facilitate collaborative enquiry and experiential learning to support and enhance effective employee participation and contribution to a workplace learning culture.

13. That professional development opportunities for workplace trainers:

    13.1 incorporate the key principles, conceptual framework and strategies implicit in the integrated model and address the needs of trainers in assessing and documenting workplace performance in relation to industry and other competencies.

13.2 provide skills training in collaborative curriculum development and the facilitation of integrated training.

14. That higher education and teacher training providers address the need for practical and experiential professional development programs which:

    14.1 incorporate the key principles, conceptual framework and strategies implicit in the integrated model and address the needs of teachers in assessing and documenting workplace performance in relation to industry and other competencies.

    14.2 will enable teachers to develop skills in collaborative curriculum development and the facilitation of integrated training.

15. That preservice teacher education programs address the needs of prospective teachers seeking employment in the field of adult and vocational education and training.

16. That research funding bodies and higher education authorities support research in vocational education and training which provides a critical analysis of:

    16.1 workplace discourse, communications and culture;

    16.2 workplace learning, training and change processes;

    16.3 numeracy and mathematical processes implicit in workplace discourse and practices;

    16.4 the impact of conventional modular training packages on workplace processes, practices and culture.

17. That follow up studies be conducted with the enterprises involved in these case studies to determine whether the effects of the integrated training are apparent after a period of 18 months.

Chapter 2
Introduction

This project was funded by the Workplace English Language and Literacy (WELL) Program and conducted by the National Automotive Language and Literacy Coordination Unit (NALLCU) during 1993 and the early part of 1994.

The project took place at a time when the vehicle manufacturing industry in Australia was facing a number of challenges, including an economic recession, reduced tariffs, and increased international competition. The need for extended workplace reform and training for all levels of the workforce had been identified. In response to the need for training of non-trades employees in the manufacturing sector of the automotive industry the Vehicle Industry Certificate (VIC) had been developed and was in the process of being implemented throughout the industry. Teething problems were beginning to emerge and ways were being sought to address the issues, including the literacy and language requirements of a largely multicultural workforce.

The prevailing view of industry, government and educators was that the lack of English language, literacy and numeracy skills of employees created a major barrier to participation in training and that access to training would need to be addressed by the provision of bridging programs and literacy/language support for VIC participants.

Included in NALLCU's charter was responsibility for coordinating literacy, language and numeracy programs, and developing strategies and materials to support participants undertaking the VIC. The proposition put by NALLCU was that a model of training, which integrated key elements of the training, would provide a more effective strategy for addressing not only the literacy and language issues, but also other issues of workplace reform. It was agreed (by the Manufacturers' Advisory Group of the National Automotive Industry Training Board (NAITB) and the Project Management Committee that this project should be conducted.

2.1 Aim of the Project

The aim of the project was, therefore, to develop, trial and evaluate a model of integrated training through six pilot programs in different enterprises across the industry.

It was intended that this model would:

- harness the existing skills and potential of employees;
- utilise the linguistic and cultural diversity of the workforce as a positive advantage;
- employ an holistic approach to the development of workplace competence;
- facilitate learning which acts as a catalyst for workplace change;
- be inclusive of all employees;

- provide the mechanism for contextualising the VIC in each enterprise.

The model was intended to be evaluated in terms of its:

- ability to overcome barriers to training and to ensure effective participation;
- applicability to accredited training, in this instance the Vehicle Industry Certificate (VIC) for non-trades employees in the vehicle manufacturing sector;
- applicability to different workplace contexts, work practices and cultures, and its capacity to address the major issues facing particular enterprises.

2.2 Terminology

1. **A model of integrated training:** The term "model" is used to represent the practical, ethical, innovative and thoughtful combination of:

   - a conceptual framework (or set of ideas) on learning, language, workplace change and so on; with
   - a set of strategies for action and implementation; and
   - a set of principles on workplace learning.

   The key concepts and principles of the integrated model are outlined in Chapter 3. The model is there represented diagrammatically (p. 29). The theoretical perspectives informing the model are outlined in Chapter 4. The case studies, Chapters 7-12, document the pilot projects which applied the model in actual workplace contexts.

2. **Integrated Training:** In this report integrated training is defined as training which is based on those elements which are integral to the training context. These elements include such factors as:

   * Organisational and technical systems
   * Key competencies
   * The technical language and "lingua franca" of the workplace;
   * Cultural factors;
   * The social, political and industrial parameters and constraints affecting the workplace including change initiatives;
   * Access and equity issues;
   * Existing skills and potential of employees.

2.3 Industry Restructure and Workplace Change

In 1991 the Federal government announced its policy for the automotive industry to the year 2000. This policy, which is still in effect, is a continuation of its Passenger Motor Vehicle (PMV) Manufacturing Plan (known as the "Button Plan") of 1985, and has the objectives to:

- increase all aspects of efficiency so as to enable the industry to compete with imports at lower levels of government assistance;
- provide better quality products for consumers at reduced real prices; and
- minimise disruption to production and employment during the transition to a more efficient industry.

The policy has three major aspects:

- a 15% duty free entitlement
- an export facilitation scheme; and
- a tariff rate phasing down in 2.5% annual steps to 15% in 2000.[1]

These moves have been accompanied by a rationalisation of the industry. When Nissan closed down in 1992, this brought the number of major manufacturers in Australia down to four and the number of people employed in vehicle manufacturing in Australia in 1992 down to 25,849 amongst the PMV producers and a further 18,038 in specialist component producers.[2]

Increased competition has driven the industry towards adopting more efficient ways of working, including the establishment of structural efficiency principles, the introduction of award restructuring, the establishment of training reform targeted to providing training credentials and a career path for "production workers", and the introduction of enterprise bargaining which devolved workplace reform to the workplace.

Workplace change in Australia has been a tripartite movement with support from industry, unions and government.[3] By the time of this project, an agreed agenda (government, employers and unions) had been reached on the ways in which workplace reform would be introduced, based on the interests of the parties.

These factors were expected to have a marked effect on this project as it would make it necessary to ensure that a training agreement covering the proposed model of integrated training was negotiated at each enterprise prior to the start of the project. The link between wages and training outcomes, and the involvement of local branches of the union had the potential to prolong negotiations.

Changes have also been occurring in the mode of manufacture, away from the concept of mass production. One example of these changes is the Japanese "lean production"[4] system which seeks to harness the skills of employees to continually improve all the elements of the production system. Lean production places an emphasis on skill formation, and in particular multiskilling of workers at all levels in an organisation. This is combined with automated machines to produce large volumes of products in enormous variety.[5] Lean production is impacting on work organisation in the industry with former management roles such as quality control being increasingly devolved to shop floor level adding to work complexity.

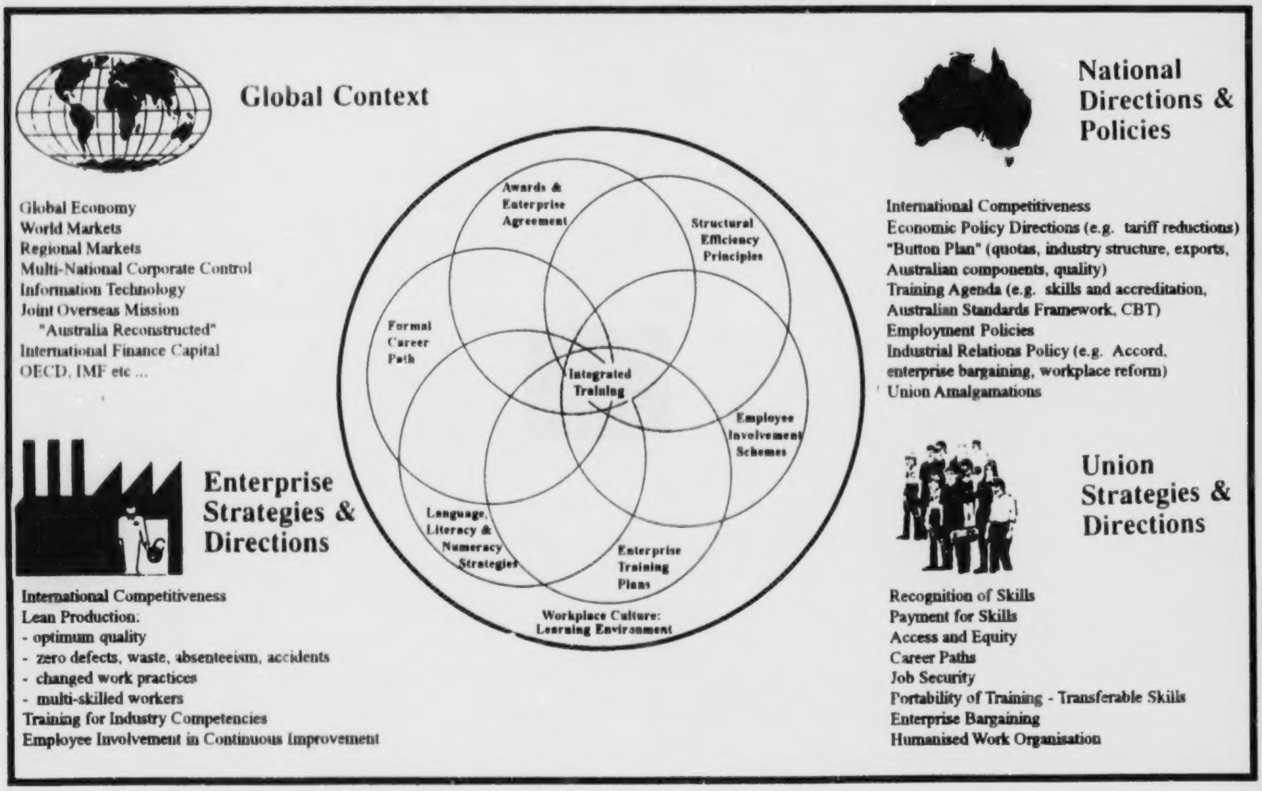
A new industrial strategy, flexible specialisation, is said to enable firms to accommodate cultural change and innovation on the shop floor.[6] The general characteristics of this emerging form of work organisation include:

- a broadening of job categories;
- formation of work teams;
- decentralised decision making;
- skill-based reward systems;
- increased training schemes;
- different selection strategies.[7]

Moves by companies in Australia to adopt these and similar systems were expected to put the training emphasis in this project on issues of quality, continuous improvement and waste elimination.

The integrated training that was proposed in this project sat rather precariously in the midst of the workplace reform agenda and was subject to pressures from many sources (see Figure 1)[8]. By insisting that the outcomes of integrated training should address these issues directly and produce recognisable results on the shop floor, the political and industrial agendas were expected to become part of the reality of the project.

FIG 1 INTEGRATED TRAINING AND THE WORKPLACE REFORM AGENDA


Global Context
Global Economy
World Markets
Regional Markets
Multi-National Corporate Control
Information Technology
Joint Overseas Mission
"Australia Reconstructed"
International Finance Capital
OECD, IMF etc ...
National Directions & Policies
International Competitiveness
Economic Policy Directions (e.g. tariff reductions)
"Button Plan" (quotas, industry structure, exports, Australian components, quality)
Training Agenda (e.g. skills and accreditation, Australian Standards Framework, CBT)
Employment Policies
Industrial Relations Policy (e.g. Accord, enterprise bargaining, workplace reform)
Union Amalgamations
Awards & Enterprise Agreement
Structural Efficiency Principles
Formal Career Path
Integrated Training
Employee Involvement Schemes
Language, Literacy & Numeracy Strategies
Enterprise Training Plans
Workplace Culture: Learning Environment
Enterprise Strategies & Directions
International Competitiveness
Lean Production:
- optimum quality
- zero defects, waste, absenteeism, accidents
- changed work practices
- multi-skilled workers
Training for Industry Competencies
Employee Involvement in Continuous Improvement
Union Strategies & Directions
Recognition of Skills
Payment for Skills
Access and Equity
Career Paths
Job Security
Portability of Training - Transferable Skills
Enterprise Bargaining
Humanised Work Organisation

BEST COPY AVAILABLE

2.4 National Training Reform Agenda

As a response to the workplace reform agenda, the national training reform agenda was negotiated and agreed between industry, government and unions, with training providers also contributing. It was agreed that the training reform agenda would cover a range of issues including:

1. Competency Based Training;
2. Competency Standards;
3. Recognition of Training;
4. Curriculum, Delivery and Assessment;
5. Entry Level Training;
6. Training Market;
7. Funding Training; and
8. Access and Equity.

In terms of literacy, numeracy, English language and communication skills, at a national level there was a growing recognition of the need for workplace communication skills (Finn Report[9], Mayer Key Competencies[10], National Core Communications Modules[11]) and the need for integrating language and literacy into vocational training programs. Testing, language audits, measurement scales, curriculum frameworks, accredited courses for literacy and language, the development of literacy and language competencies, and talk of the need to include such competencies into awards were the discourse of the day.

2.5 The Vehicle Industry Certificate (VIC)

Initially developed and accredited in Victoria in 1990, this TAFE certificate course was unique at the time. It was the first course developed by industry to meet its own training needs and accredited by TAFE, thus acknowledging the portability of skills and knowledge of employees across the manufacturing industry. It recognised the training needs that lay outside the traditional skills curriculum. Although the skills and knowledge learning outcomes were separated, it represented a giant leap forward in attempting to meet the requirements of the shop floor workers who had been denied any form of formal training recognition.

One of its strengths has been its flexibility whereby people from a wide range of work areas have been able to develop the skills they require for their work within the framework of an accredited TAFE certificate course.

2.6 The Work Placed Education Project

In 1991 a Work Placed Education Project was undertaken by the Victorian Automotive Industry Training Board to identify the literacy, numeracy and English language learning needs of non-trades employees in the vehicle manufacturing sector of the automotive industry in relation to the newly accredited VIC.

The Project Report[12] identified the need for a range of integrated strategies to:

- ensure that programs of accredited training are designed to accommodate the needs of learners (including language, literacy and numeracy) and to ensure access and equity;
- develop curriculum materials which draw on employees own experiences and the language and technology of their workplace.

Acting on the recommendations of the Work Placed Education Project Report, the automotive industry, through the NAITB, sought support from the Commonwealth to establish a national industry coordination and support unit to address the identified needs.

2.7 National Automotive Language and Literacy Coordination Unit (NALLCU)

In 1992 NALLCU was established with funds from the Workplace English Language and Literacy (WELL) Program. The charter for NALLCU was to provide a coordinated approach to meeting the literacy, English language and numeracy needs of non-trades employees in the vehicle manufacturing industry by integrating literacy, numeracy and English language provision into the VIC using a range of strategies.

Funding was received for three purposes:

1. To establish a central unit and employ a range of coordinators to work at enterprise level in the larger manufacturers, and across some of the smaller manufacturers;
2. To develop a process of establishing learning needs;
3. To develop appropriate learning materials for the VIC that would meet the learning outcomes of the VIC at the same time as meeting the identified learning needs of the employees. An integrated strategy was to be adopted and a developmental learning program for the VIC developed.

Coordinators working at enterprise level had the task of coordinating existing literacy and language programs (English in the Workplace (EWP) in Victoria and Workplace Education Service (WES) in South Australia) and establishing new programs, and of finding innovative ways of meeting the literacy, numeracy and English language needs of employees within the context of the VIC.

In many companies existing EWP and literacy classes became VIC classes, with full credits being given for modules completed in this way. For some, EWP and WES literacy classes were seen as being preliminary to the VIC with no credits given, and the VIC was treated separately. In some companies learning centres were established to give additional support to VIC participants in either a group or individual situations. Time for working with trainers and sessional teaching staff was built into the load of the coordinators. More than a hundred employees from one company have graduated with their VIC, having received all their off-the-job training in a language class.

The learning needs assessment process that was developed has been used to inform the provision of programs, the development of suitable learning materials, and in some cases to assist to change the way training is provided in a number of companies. It has certainly raised the awareness of companies to the learning needs of their employees and helped to focus the training on outcomes in the workplace, rather than literacy and language levels of employees.

In the third category of funding, some generic learning materials were developed for numeracy[13] and individual coordinators created new materials for their trainees on site. This Report is the result of an action research project which was one of the initiatives undertaken using the portion of the WELL funds that was allocated to the development of appropriate learning materials for the VIC. It represents a new approach to training in the VIC.

2.8 Re-Defining the Problem

Both the Work Placed Education Project and NALLCU were established with a deficit model[14] of worker literacy implicit in their methodology. This was apparent in notions of identifying learner needs and developing strategies, curriculum and learning experiences to meet these needs.

In the integrated training strategies trialed and reported here, a new mind set was required whereby the emphasis shifted to the existing strengths, abilities, attributes and workplace competencies of workers. The task then became one of constructing the training from this base.

This new perspective then informed the practice of NALLCU in a variety of ways. For instance, in the area of learning needs assessment the emphasis shifted to one of assessing the strengths of workers and analysing the ways in which the training could utilise these strengths.

This was a totally different view which focused on learners' strengths, rather than looking for problems that needed to be resolved. It implied a shift away from the perception that individual workers have problems to one of examining the systemic processes of 'generic' curriculum development as the possible source of the problem.

In terms of listing competencies required of workers, it shifted the emphasis from literacy and language deficits to performance criteria that were not necessarily related to correct English language and literacy. In terms of industry awards, it shifted the emphasis away from the need for literacy and language classes to one of access, equity and quality educational processes in training.

2.9 Automotive Industry Position on Literacy and Language

In 1993 the industry, through the NAITB, formally adopted the view that it was not desirable to express separate literacy and language competencies (or elements of competencies) in its industry standards[15]. This was based on the following:

* these may create barriers to successful participation in the VIC by establishing mandatory requirement for particular literacy and language skills at each level. It was the experience of enterprises that employees with varying levels of language and literacy can participate successfully when the focus is on understanding and demonstrating the practical application of complex content and concepts;

* stating minimal levels for literacy and language skills may have a reductionist effect on the teaching of these skills by limiting it to completing tasks such as, "is able to complete a simple form";

* placing literacy and language hurdles in levels of the VIC may devalue evidence of thinking skills and understanding of content simply because these are not expressed in a standardised form of English as specified in language and literacy competencies.

It was the opinion of the industry that literacy and language skills should be integrated into the learning process so that these skills are developed at all levels depending on the potential and aspirations of the employee. This project was based on this position.

2.10 This Report

As this project represented an innovative and unproved approach in the industry, the method adopted was one of action research, as is reflected in the presentation of this report.

Chapter 3 examines the industrial context, establishes the rationale for the approach taken and describes the integrated model that was adopted. Chapter 4 outlines some of the key theoretical perspectives from the educational literature which lend support to the approaches taken in the integrated model. Chapter 5 explains the methodology that was employed in each of the six different enterprises in the context of a coordinated series of action research projects and Chapter 6 introduces the case studies and discusses the implementation of the project and the ways in which the case studies were developed. Chapters 7 to 12 present the detailed case studies for each of the six projects undertaken. An evaluation of the project in relation to its aims is undertaken in Chapter 13 and the learning and curriculum issues that arose from the project are discussed in Chapter 14.

Finally Chapter 15 examines the major conclusions that arose from this project, the implications for the system and the industry, and consequent recommendations.

Endnotes

1. Automotive Industry Authority (1993) *Report on the State of the Automotive Industry 1992*, AGPS, p.9.

2. Ibid. p. 96

3. See ACTU (1987) *Australia Reconstructed* and the Business Council's (1989) *Enterprise Bargaining: A Better Way of Working.*

4. Womack, James P., Daniel T. Jones and Daniel Roos (1990) *The Machine That Changed The World: The Story of Lean Production*, Harper Perennial, USA.

5. Ibid. p.13.

6. Piore, M. & C. Sabel (1984) *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York, p.17.

7. See Littler, C. (1989), "Debates over new technology, new production concepts and restructuring" in editorial introduction, *Labour & Industry,* Vol 2, No. 2, p.91.

8. See Sefton, R. (1993) "An Integrated Approach to Training in the Vehicle Manufacturing Industry in Australia" in *Critical Forum* Vol. 2 No.2.

9. Finn Report *Review of Young People's Participation in Postcompulsory Education and Training,* AGPS, 1991.

10. The Mayer Committee *Employment-Related Key Competencies: A Proposal for Consultation*, Owen King Printers, 1992.

11. *National Communication Skills Modules*, ACT Institute of TAFE, Canberra, 1992.

12. Victorian Automotive Industry Training Board, 1992.

13. Marr, Beth, Dave Tout and Chris Anderson (1994) *Numeracy on the Line*, NAITB, Melbourne.

14. The term deficit model is here used as a shorthand way of referring to models or approaches (to education and training) which assume that learners - particularly those not succeeding in the system - are in some way inadequate, incomplete or deficient. Typically, within the deficit model, various remedial, compensatory or bridging programs are proposed to address the learners' deficiencies. Sheryl Geenwood Gowen (1993) offers an excellent critique of the deficit model in relation to workplace language and literacy in "Beliefs about literacy: measuring women into silence/hearing women into speech" in *Critical Forum* Vol.2, No. 3, December.

15. Expressed in a letter to the (then) Minister for Employment, Education and Training, Hon. K.C. Beazley, dated 30 June 1993.

Chapter 3
Background and Rationale for the Project

The rationale for developing a particular model of integrated training needs to be understood in the broad context of many factors, some quite disparate, others interrelated.

3.1 Background

VIC in Context of Workplace Change

The VIC was one of the first nationally accredited training programs to be designed for non-trades employees working in the manufacturing sector in Australia. It was developed by representatives of all the major vehicle manufacturers and the AFMEU (Vehicle Division) in consultation with TAFE and under the auspices of the Victorian, and later National Automotive Industry Training Boards. It was developed in response to the challenges seen to be confronting the industry locally and internationally and was intended to accommodate and support changes brought about by award restructuring[1].

Although mechanisation in many Australian vehicle manufacturing plants had extended to significant levels of sophistication and complexity, for example, with computerisation, robotics and state of the art technology, work organisation and job profiles for many non-trades employees had not changed greatly over the years. The "scientific method of work organisation" as instituted by Frederick Winslow Taylor; and the synchronous line, simplified assembly techniques and standardised mass production processes developed by Henry Ford and others had had an enduring impact in Australia as elsewhere.

Mass Production in its purest form required that the operator remain stationary and focused on standardised and repetitive tasks while the production line moved. The masses of immigrants who spoke 50 languages between them in the giant car plants of Detroit in 1915 were not required to communicate with each other or to think[2]. The economic and organisational advantages of mass production as perceived in the vehicle industry led to its extension into most areas of productive activity in the major economies of the twentieth century. The bulk of workers employed in vehicle mass production were seen to be unskilled or semi-skilled, requiring no formal education or training. On-the-job training was minimal, often given informally by the Leading Hands, Supervisors and/or fellow employees and frequently amounted to demonstration and direction. Although prior experience may have been utilised, it was not recognised either formally or through awards.

Despite the constraints imposed by Mass Production, many employees have always had more skill, knowledge, capacity for flexibility and insight into how work could be done more efficiently than perhaps has previously been recognised by managers and supervisors.[3]

However, by the 1980s, mass production in the vehicle industry began to lose the competitive edge it had held unrivalled for fifty years. New work organisation systems such as Japanese Lean Production[4], the German anthropocentric approach[5], the Swedish use of semi-autonomous work groups[6], and closer to home, cellular manufacturing at GMHA (SA) challenged Taylor's myth of what workers had to offer and how work could be organised. Although these systems of work organisation[7] reflect different cultural and political contexts, they share a common goal of flexible specialisation[8] as an industrial strategy to accommodate continual change and innovation on the shop floor.

In line with the aims of the training reform agenda[9], the architects of the VIC saw training as one of the strategies for developing new skills and transforming work practices. It was intended to promote cross-skilling and multi-skilling in a predominantly multi-cultural workforce, to accommodate the increasing diversity and complexity of work requirements, to provide career paths in the non-trades area, and to foster changes in work organisation.

The emphasis in work organisation would be more on group interaction rather than individuals working in isolation, (for example, formation of natural work groups, work teams, cellular manufacturing, group technology etc.) Depending on industrial agreements, changes in work organisation would require employees to take on varying degrees of responsibility[10] for planning, organising and managing their work area, and monitoring quality.[11] They would be encouraged to think creatively and take initiatives in the workplace to eliminate waste and achieve continuous improvement. The VIC training was, however, directed at non-trade operators and not to the hierarchy of supervisory or managerial staff who control work organisation.

Conceptual Framework of the VIC Syllabus

The scope and conceptual framework of the VIC was developed by the automotive industry prior to the adoption of competency based training (CBT). The resultant curriculum was divided into three areas - core knowledge, elective knowledge and skills streams. Representatives from Enterprises, AFMEU (Vehicle Division) and TAFE worked on developing generic (core)[12] and specific (elective) knowledge outcomes expected to complement or be essential to on-the-job skills. The conceptual framework of the VIC knowledge and skills syllabus is summarised briefly, to illustrate both the emphasis and assumptions underpinning the VIC. The VIC syllabus emphasised:

- specialist knowledge and skill relevant to enterprise specific streams in vehicle manufacture, i.e. assembly, warehousing, foundry, etc., and that there is some commonality in these elective streams across companies;

- generic knowledge and skill involving communications, cooperating in groups, problem solving, safer work practices, etc., all of which are assumed to be transferable to other work places;

- enterprise specific knowledge and skills in implementing quality control, waste elimination, inventory control, work re-organisation and problem solving etc.based on manufacturing processes[13] in individual companies and understanding of roles and responsibilities in the workplace;

- an overview of the vehicle industry in Australia and the implications of the Button Plan[14] for a leaner and more competitive industry subject to continuing pressures of competitive advantage.

The skills component was analysed on-the-job at enterprise level. Although contextualised and organised in enterprise preferred profiles or skill clusters, the skills were intended to conform to the agreed generic descriptors for purposes of transportability (and accreditation). The development of industry specific competencies and competency standards occurred after the knowledge and skills syllabuses were completed, in reverse to the usual CBT curriculum development process. The VIC was accredited in 1991, and a new CBT format was accredited in 1993, during the life of this project. Apart from semantic and syntactic changes to syllabus format, the learning outcomes and performance criteria remained in essence the same.

The scope of the knowledge units provides ample opportunity for the creation of a dynamic curriculum. However, the fragmentation[15] and reduction of the learning outcomes and performance criteria have to some extent compromised the capacity of the curriculum to meet the diversity and complexity of work place needs. The original syllabus was divided fairly arbitrarily into Levels 1, 2 & 3 and translated directly into modules of training materials developed by TAFE as part of an ACTRAC-funded project. Unfortunately, the fragmentation was not addressed during the materials development phase. These exemplar modules were designed as stand alone[16], self-paced, generic packages thought to provide flexibility of use.

However, when employers talk of the need for flexibility and relevance in the workplace, they are talking in terms of flexibility of function and specialisation. That is, employees require the skills and abilities which enable them to be deployed flexibly, through job rotation or by choice, to a range of contexts, jobs and responsibilities depending on production needs, particular contingencies or career path and other initiatives. Apart from specialist and generic skills, job rotation also requires a repertoire of cooperative behaviours as work group/ team membership changes and employees must adjust to new relationships, cooperate and communicate effectively. This kind of flexibility requires specialised, contextualised and developmental learning in the context of the group, and the mechanism to change the curriculum to reflect changes in the workplace[17] as they occur.

Implementation Issues

With the implementation of the VIC in a number of enterprises in 1992, some issues emerged:

- the need to contextualise the generalist curriculum materials;
- problems of literacy and language in training materials and assessment;

- recognition of prior learning (RPL);
- training provision.

It was the second of these issues that this project was designed to address, but it was the first issue that it had to address in order to achieve that end.

3.2 Myths

Early in the project a paper addressed to the industry[18] outlined a number of myths surrounding the VIC and the way people learn. It was the presentation of this paper to the various enterprises that set the scene for the conduct of this project. The myths are revisited here as part of the educational rationale for the project.

1. The first myth is that the VIC can be effectively implemented in separate components, i.e. core and elective knowledge, in isolation from on-the-job skills, and that, by "osmosis", employees will be able to integrate those separate components to develop on-the-job competence. This is a fairly difficult way of learning and developing new competencies, including language, literacy and communication skills. While the elements of on-the-job skills and off-the-job core and elective units are listed separately in the syllabus, the preamble to the syllabus recommends that *"where possible the knowledge, skill and workshop experience should integrate and be assessed ... to ensure the participant has achieved the stated level of competency." (6.2)*. The syllabus encourages each enterprise to arrange the units of the curriculum "*to derive maximum benefit*", in the context of their own enterprise. Thus it acknowledges the need for integration of the curriculum, but leaves the task to individual enterprises.

   It was proposed to industry that, if the VIC is to be truly competency based, and to reflect the industrial/economic imperatives of award restructuring and international competitiveness, then the curriculum document must be re-interpreted and implemented as an integrated model, within the context of each enterprise.

2. The syllabus inadvertently creates the next myth - that the performance criteria of the knowledge units need not relate to the real demands of on-the-job competencies. For example, in Topic 3.5, "Active Listening Techniques", the performance is measured in terms of rote learning - "the participant will be able to identify (name) four key active listening elements ... when following instructions". The assessment is concerned with theory not with demonstrating listening and comprehension in a real workplace context.

   In Topic 1.1, the performance is again measured in terms of rote learning - "State the mutual benefits of safety ... and explain employees responsibility in health and safety ... indicate the relationship to other workers and the mechanism available for reporting unsafe working conditions." The questions have to be asked,

   * How will rote learning of "mutual benefits" change attitudes to ensure the trainee now values his/her and others' safety, and is willing and able to change work place behaviour, eg. stops taking risks?

- How will the trainee develop the language and communication skills necessary to negotiate safety in the work place?

If workplace language, literacy, communication and other skills are to be developed and extended, it was put to industry that those outcomes would need to be quite specifically targeted in a workplace context.

3. A further myth implied by the syllabus is that theoretical and abstract text book language is the same kind of language (genre) used in workplace communication. In practice this myth has been extended to suggest that teaching the literacy and language skills needed for the theoretical knowledge units will increase literacy and language skill on-the-job. For example, in Topic 6.6 "Overcoming Common Barriers To Group Effectiveness" the performance criteria requires the participant to "*identify (name) key factors which limit group effectiveness and to indicate how each key barrier may be overcome.*"

   However, competence in overcoming real barriers to communication on the shop floor requires the participant to demonstrate quite different language skills (words and facility), communication strategies (negotiating skills, problem solving, thinking skills), co-operative behaviour (assertiveness, confidence, consideration), common sense, insight (awareness of cultural differences) and familiarity with acceptable workplace practice.

Additional myths identified in the earlier paper to industry included:

4. That traditional testing[19] through written and oral responses is a reliable way of measuring competency.

5. That passive learning (reading and writing text responses) trains people for action on the shop floor.

6. That lack of, or minimal, reading and writing skills will necessarily prevent already very competent workers[20] from demonstrating on-the-job competencies.

3.3 Evolving a Model for Integrated Training

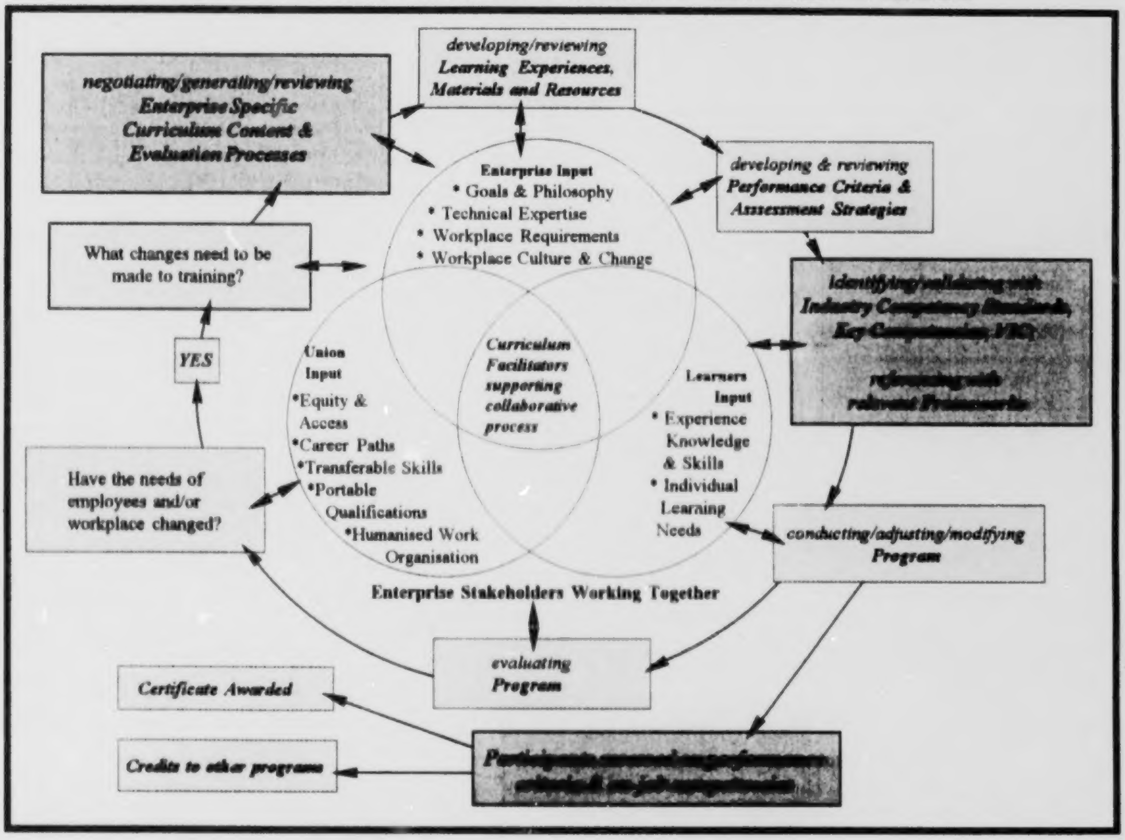
A systems analysis approach was used to develop a model for integrating accredited VIC training into the workplace context so that,

- all employees, irrespective of their educational level or English language and literacy skills would be able to participate successfully in mainstream training, in mixed ability, multi-ethnic groups;
- the diverse and changing needs of learners and their specific workplace would be addressed;
- accredited curriculum could be developed in a holistic, relevant and dynamic way.

The case studies were expected to trace the evolution of the model in different workplace contexts and illustrate its salient features. The model provides a conceptual framework with explicit collaborative processes, strategies, principles and philosophy for fostering the development of a learning culture in the workplace to support the on-going learning of employees, and facilitate the development of the necessary skills, abilities and attributes for the modern workplace[21].

The process of collaboration and consultation was expected to be central to the development of curriculum in each of the six enterprises. The principles of this process, illustrated in Figure 2, were to be used to achieve an authentic curriculum based on the actual needs of the workplace. It was to provide a means of involving all stakeholders in the process of determining what could or should be learnt, how and why. It was also to provide them with the experience and strategies for continuously improving the learning program beyond the immediate project. Last, but not least, it would position learning about the workplace in the workplace, as part of a working-learning culture.

Fig 2 A Collaborative Process of Continuous Improvement in Training



negotiating/generating/reviewing Enterprise Specific Curriculum Content & Evaluation Processes
developing/reviewing Learning Experiences, Materials and Resources
developing & reviewing Performance Criteria & Assessment Strategies
Identifying/validating with Industry Competency Standards, Key Competencies, VEC
referencing with relevant Frameworks
conducting/adjusting/modifying Program
evaluating Program
Certificate Awarded
Credits to other programs
Have the needs of employees and/or workplace changed?
YES
What changes need to be made to training?
Enterprise Input
• Goals & Philosophy
• Technical Expertise
• Workplace Requirements
• Workplace Culture & Change
Union Input
•Equity & Access
•Career Paths
•Transferable Skills
•Portable Qualifications
•Humanised Work Organisation
Learners Input
• Experience Knowledge & Skills
• Individual Learning Needs
Curriculum Facilitators supporting collaborative process
Enterprise Stakeholders Working Together

This process of involving all stakeholders in determining the focus and content of the curriculum goes beyond the notion of simply customising generic curriculum. It is a process which:

- focuses on developing an overview of the workplace and its key organisational elements so that the curriculum, and implementation models which evolve are enterprise specific, responsive to change and always relevant;

BEST COPY AVAILABLE

- helps connect together critical knowledge and resources which are often fragmented and dispersed throughout the workplace;
- fosters an understanding that real learning[22] involves new insights, and changing one's mindset[23], a concept well beyond the notion of training as a process of transferring information into "empty vessels".

The collaborative process is intended to facilitate the development of a genuine learning culture and commitment to more realist, not just rhetorical, strategies for continuous improvement in the workplace.

The development of a learning culture is shaped by the following explicit strategies:

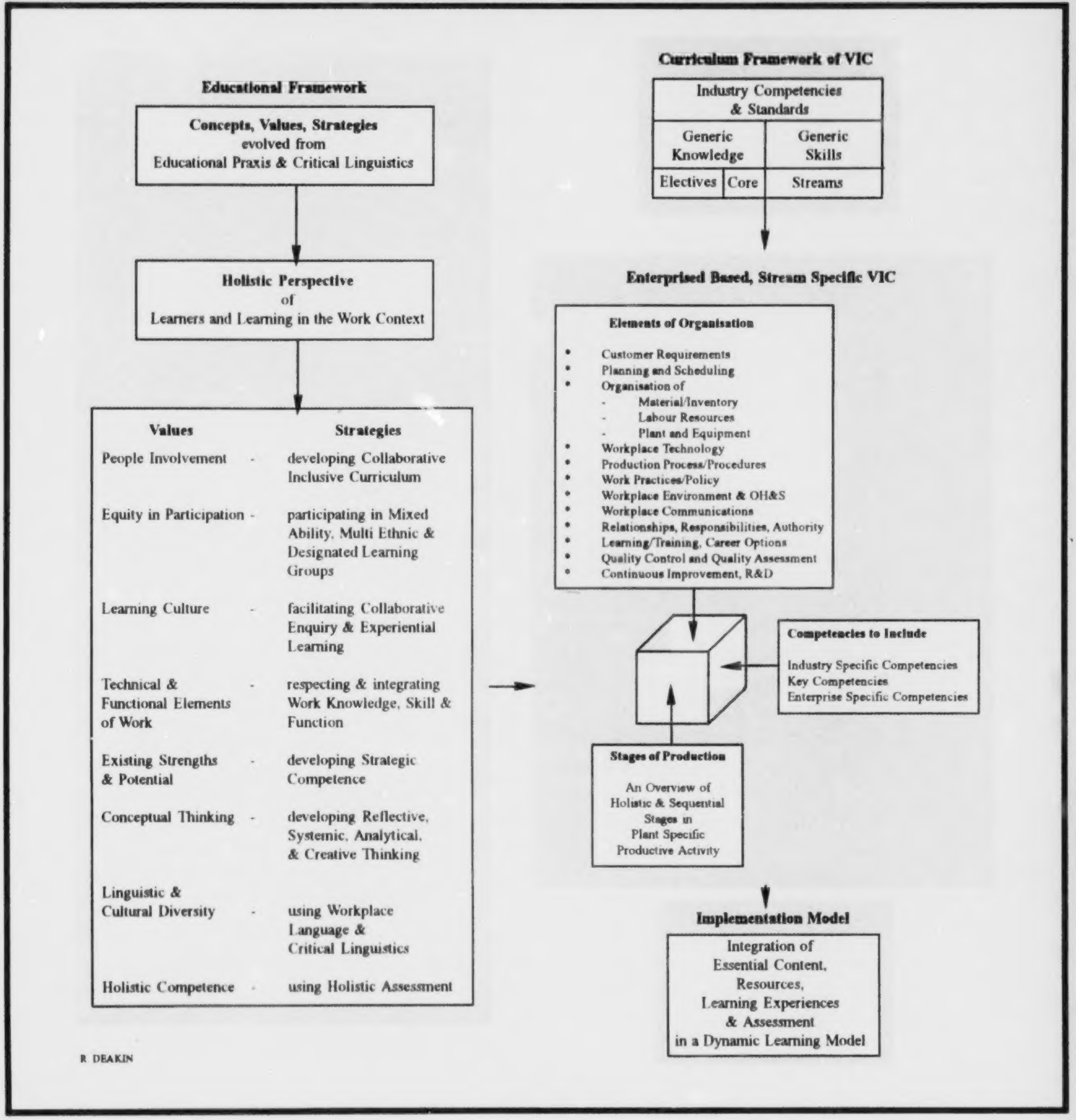
- building a shared vision (common goals);
- developing an holistic perspective (of the enterprise in a local/global context);
- learning as a team;
- learning through enquiry and insight; and
- thinking systematically, so that all the elements of the learning culture are integrated into a coherent structure.

Explicit in this model are the following principles, that:

- the curriculum is able to respond to the diverse and changing needs of both the learners and their specific workplace;
- the process of continuously improving the curriculum, its implementation, learning activities, resources and assessment is the joint responsibility of all stakeholders;
- the strengths, potential and linguistic and cultural diversity of employees is valued;
- access and equity is achieved through the establishment of mixed ability, multi-ethnic and dedicated learning groups;
- the focus is on learning and the development of strategic competence which is underpinned by effective thinking, organisational, interpersonal, communicative and practical skills;
- the resources of the workplace, its unique language forms, people and networks, form an integral component of the program;
- the assessment of competence is holistic, contextual, relevant and ethical.

The model illustrates the process of contextualising the generic VIC curriculum and integrating the ideas, values and strategies of the educational framework with the work-life of the plant. The implementation model which emerges provides the best opportunity for successful participation by a diverse workforce in accredited training. This model specifically targets participation in multi-ability, multi-ethnic groups which reflect the reality of the workplace. This strategy draws on the relationships, the language and interactions of the workplace to accelerate learning and support the development of contextually appropriate literacy and language skills. It takes a holistic perspective of learners in the context of their working/learning environment. Figure 3 illustrates the values which underpin the model and how these translate into strategies to create and give direction to the process of designing, developing, implementing and evaluating enterprise-specific VIC training.

FIG 3 INTEGRATED MODEL IN THE CONTEXT OF ACCREDITED TRAINING


Educational Framework
Concepts, Values, Strategies evolved from Educational Praxis & Critical Linguistics
Holistic Perspective of Learners and Learning in the Work Context
Values
Strategies
People Involvement - developing Collaborative Inclusive Curriculum
Equity in Participation - participating in Mixed Ability, Multi Ethnic & Designated Learning Groups
Learning Culture - facilitating Collaborative Enquiry & Experiential Learning
Technical & Functional Elements of Work - respecting & integrating Work Knowledge, Skill & Function
Existing Strengths & Potential - developing Strategic Competence
Conceptual Thinking - developing Reflective, Systemic, Analytical, & Creative Thinking
Linguistic & Cultural Diversity - using Workplace Language & Critical Linguistics
Holistic Competence - using Holistic Assessment
Curriculum Framework of VIC
Industry Competencies & Standards
Generic Knowledge
Generic Skills
Electives
Core
Streams
Enterprised Based, Stream Specific VIC
Elements of Organisation
Customer Requirements
Planning and Scheduling
Organisation of
- Material/Inventory
- Labour Resources
- Plant and Equipment
Workplace Technology
Production Process/Procedures
Work Practices/Policy
Workplace Environment & OH&S
Workplace Communications
Relationships, Responsibilities, Authority
Learning/Training, Career Options
Quality Control and Quality Assessment
Continuous Improvement, R&D
Competencies to Include
Industry Specific Competencies
Key Competencies
Enterprise Specific Competencies
Stages of Production
An Overview of Holistic & Sequential Stages in Plant Specific Productive Activity
Implementation Model
Integration of Essential Content, Resources, Learning Experiences & Assessment in a Dynamic Learning Model
R DEAKIN

The conceptual framework of the integrated model draws its ideas, values and strategies from an educational praxis which focuses on language acquisition and use in its social context. These issues are explored further in the following chapter.

BEST COPY AVAILABLE

Endnotes

1. *Report on the State of the Automotive Industry1989,* 1990, Automotive Industry Authority.

2. Survey of employees in Daniel Raff, "Wage Determination Theory and the Five Dollar Day at Ford," Ph.D. dissertation, Massachusetts Institute of Technology, 1987, provides an interesting study of the social implications of Ford's system.

3. Prior to joining NALLCU, Project Officers, Jane Sims and Ann Eller, and the Curriculum Planning Officer, Rosemary Deakin had all been teaching core knowledge units of the VIC at HEC. This experience was invaluable in discovering the wealth of skill and potential which exists among production workers. Perceptions of Managers/Supervisors did change as a result of this project (see case studies).

   It was also an opportunity to reflect on how the curriculum could be contextualised to maximise the potential of the VIC as a training initiative for facilitating career path development and meaningful employee involvement in workplace change.

4. Womack, J.P., D.T. Jones, & D. Roos (1990) *The Machine That Changed The World: The Story of Lean Production*, Harper Perennial, USA.

5. Anthropocentric or human centred production approaches aim to enhance operator skills, increase autonomy and improve the work environment by developing "socially compatible" technology systems. The production and technology systems are specifically designed with human needs and competencies in mind; from *International Best Practice,* Department of Industrial Relations & Australian Manufacturing Council, 1992, p. 22.

6. Ibid. p.22

7. Littler, C. (1989), "Debates over new technology, new production concepts and restructuring" in *Labour & Industry*, Vol. 2, No. 2. p.191.

8. Flexible Specialisation as described by Piore, M & C. Sable (1984) *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York, p.17.

9. An analysis of training imperatives within the context of the training reform agenda is beyond the terms of this report, however a number of useful references are cited, for example in relation to the context of the training agenda, the rationale for and efficiency of CBT as well as broader issues of reformist policies. Stevenson, J. (ed) (1993), "Policies and practices in vocational education and training" in Hall, W.C. (ed.) *What future for technical and vocational education and training?,* NCVER, Adelaide

10. Ford Natural Work Groups in Plastics and GMHA Hardware Cellular Production illustrate that some local plant specific models increased responsibility and reduced supervision more than the Japanese lean production model which tends to increase supervision in other forms.

11. This change in perception of the role of non-trade employees in the vehicle industry is reflected in the *Report on the State of the Automotive Industry 1991*, p. 26, indicating that production employees in Australian assembly plants in 1988 performed little in the way of quality tasks. However, by 1991 the measure of this activity had doubled with employees being given increased responsibilities in the areas of inspecting incoming parts, inspecting work in progress, inspecting finished products and gathering and charting quality data.

12. Implied in the concept of generic are notions of transferability of knowledge and skill to different contexts (enterprises) and tasks. The number of knowledge units devoted to generic (core) communications, problem solving, group co-operation, work organisation reflects the influence of the Finn Report and the debate about appropriate education and training for work, see The Mayer

Committee (1992) *Employment-Related Key Competencies: A Proposal for Consultation*, p. 66.

13. The enterprises jointly determined the scope and learning outcomes of the manufacturing processes unit, but agreed to each develop the context of their own modules rather than have generic packages produced through the ACTRAC project.

14. *Report on the State of the Automotive Industry 1988*, Automotive Industry Authority (1989), AGPS, Canberra, p. 88.

15. Stevenson and McKavanagh argue that fragmentation of learning into modules results in disaggregation of knowledge which in turn undermines the capacity for transfer of learning. McKavanagh, C.W., (1992), "Skill formation for the work place" in Poole, M. (ed) *Education and Work*. Hawthorn, Vic: Australian Council for Educational Research.

16. Gribble warns that if worker knowledge and skills are reduced to small, packaged, encyclopaedic, incremental and prefabricated bits .... along the lines of Taylorism, there is a risk of ignoring the whole, the comprehensive, the conceptual, the broad knowledge of production and the knowledge of the social context of work, Gribble, H. 1990. "Resisting Hijack and Seduction" in *Literacy Exchange* No. 2: 41-55. GATA.

17. According to Peter O'Connor (1993), such an understanding of the workplace would require a perspective that viewed workplace learning as multi-dimensional and consisting of complex contexts, meanings and practices in different and shifting configurations. It may require an understanding as to why and how workers actually use language and literacy to accomplish job performance, and a view that workers, throug their interactions, experience, activity and relationships are constantly learning, *ALBSAC News* No. 5, September, p.2.

18. Deakin, Rosemary (1992) "VIC: Myths, Realities and Possibilities", unpublished paper, NALLCU.

19. Fegent warns that competence-based training has led to more frequent assessment (he uses the term 'atomisation') and, because much of this assessment is print-based, what is really being assessed is literacy skill. Fegent, I 1993, *Language and Literacy issues in CBT assessment*, NCVER, Adelaide.

20. Hill (p.75) quotes a worker as saying 'We have done the job well for 27 years. I understand how to work the machine. I have improved the performance of the machine and I have trained other workers. I am always told I am a good leading hand. Now they say you need to read and write and pass tests to do the same job I have been doing. That's not fair. The way they give tests, how can anyone pass them?' Hill, E. (1990), *Migrant Workers and Award Restructuring*, Office of Multicultural Affairs, Department of the Prime Minister and Cabinet, Canberra.

21. Benson argues the case for integrating learning in context as the majority of people grasp concepts, abstractions, and principles more thoroughly and with greater lasting effect when theory and application are immediately related. Grubb (p.9) likewise argues that knowledge (especially expert knowledge) is often specific to a particular activity or area of expertise, and that for most people effective learning requires a context that matters to them. Benson, C.S. "New Vocationalism in the US: Potential Problems and Outlook", in Hall, W.C. (ed.) (1993) *What future for technical and vocational education and teaching* NCVER, Adelaide. Grubb, W.N., Davis, G., Lum, J., Phihal, J. & Morgaine, C. (1991), *The Cunning Hand, The Cultured Mind: Models for Integrating Vocational and Academic Education*, Berkely, California: National Center for Research in Vocational Education.

22. Neville, B. (1994), "Teaching and Transformation", paper presented at the 6th Annual La Trobe University Summer School for Adult Literacy and Basic Education Practitioners, February.

23. Peter Senge (1990), *The Fifth Discipline*, Random House, Australia.

Chapter 4
Theoretical Perspectives

As can be seen from the preceding chapters, the integrated model was developed as a practical and pragmatic response to complex industrial and educational challenges. The model evolved from work by Deakin, Sims and Eller at HEC. This work took place at a time when various notions of integration and integrated training were beginning to appear in policy documents, reports and literature on vocational education and training[1].

Whilst the model developed by NALLCU emerged from practice in the field, it can be supported by theoretical perspectives drawn from a wide body of literature in the fields of education, training, socio-linguistics and change management. This chapter outlines some of the key theoretical perspectives supporting the integrated model.

4.1 Collaborative Negotiated Curriculum:

There is a well established body of educational and research literature dealing with the concept and polemics of negotiating curriculum, particularly in the context of adult education and language/literacy education.[2]

Malcolm Knowles, one of the best known writers on adult learning, has popularised the concept of andragogy to identify what he sees as good practice in adult education. He stresses the importance of collaborative curriculum as one of the central tenets of andragogy.

> "... a cardinal principle of andragogy (and, in fact, all humanistic and adult education theory) is that a mechanism must be provided for involving all the parties concerned in the educational enterprise in its planning. One of the basic findings of applied behavioural science research is that people tend to feel committed to a decision or activity in direct proportion to their participation in or influence on its planning and decision making. The reverse is even more relevant: people tend to feel uncommitted to any decision or activity that they feel is being imposed on them without their having a chance to influence it." [3]

Knowles stresses that the learner's involvement in these planning processes must be genuine:

> "Merely having mechanisms for mutual planning will not suffice. They must be treated in good faith, with real delegation of responsibility and real influence in decision making or they will backfire."[4]

Knowles points out that the process of determining what goes into a learning program is one of give and take. However the learners' own perceptions must be a legitimate part of the process.[5] He suggests that there are basically three sources of data for the curriculum; the learner, the organisation, and the society. He advocates a model that,

> "represents an amalgamation of the perceptions of desired competencies from all of these sources, but in case of conflicting perceptions, my practice is to negotiate with the conflicting sources - usually the organisation and the individual. I make no bones about the fact that there are 'givens' in every situation - such as minimal organisational requirements, and that we have to accept and live with them."[6]

Thus although certain requirements are "given" there must remain room for negotiation. The integrated model is based on these principles of negotiation and, as the case studies illustrate, the final curriculum in each case, does represent "an amalgamation of the perceptions of desired competencies".

Knowles is not the only adult educator to stress the importance of negotiating curriculum. His work owes much to the Canadian adult educator Allen Tough[7] who stresses the importance of adults being "highly deliberate" or self directed learners. Tough's work showed that successful adult learning springs from activities in which the adult learners have control over the content, method and direction of their own learning "projects".

Paulo Freire bases his approach to adult education upon generating effective dialogue between the teachers, who are sometimes learners, and the learners who are sometimes teachers. He notes that,

> "Only dialogue, which requires critical thinking, is also capable of generating critical thinking. Without dialogue there is no communication, and without communication there can be no true education."[8]

The principle of negotiated curriculum is also enshrined as one of the guiding principles of the *Good Practice in Adult Literacy and Basic Education in Australia* documents. These publications, funded by the Commonwealth Government through its policy on Language and Literacy have the stated aims of "informing Australian Adult Literacy workers of good practices" and "improving quality in adult literacy teaching and learning". The first issue of *Good Practice*[9] was devoted entirely to student centred learning and negotiated curriculum. The key criteria for the selection of articles to appear in *Good Practice* insist that they must describe teaching-learning activities which:

> "Are student-centred and include joint decision making wherever appropriate; ... [and]... Reflect the principle that learning best takes place through activities with purpose and relevance to students in their own social and cultural context."[10]

Central to all of these notions of collaboration, dialogue and negotiation is a profound respect for the adult learner and what he or she brings to the learning situation. This respect carries with it a recognition of the skills, experiences and sensibilities of the learner. Such an approach does not position the learner as an empty vessel to be filled; but rather sees the learner as a whole person with needs, aspirations, feelings, knowledge, skills and ideas which will inevitably affect his or her learning. Within this perspective the adult learner is not seen as a passive recipient of training but as one to be engaged actively and thoughtfully in the teaching-learning process; as a contributor as well as a recipient.

The "learning contract" is one practical means by which the results of the negotiation processes are spelt out and implemented. Knowles suggests that contract learning "is the single most potent tool [he has] come across" in more than fifty years experience as an adult educator.

When working with adult learners with a history of limited or unsuccessful schooling the collaborative processes of curriculum development are generally considered to be particularly important. Few respected practitioners in the field of adult education would now argue against the principle of negotiation. The debate revolves around the extent to which the parameters of the negotiation process are predetermined and the nature of the power relationships which impinge upon the negotiation processes.[11] The concepts of negotiated curriculum, learning contracts, and learning projects are evident in the case studies offered in this report.

4.2 Holistic and Systemic Perspectives

Another key theoretical perspective informing the development of the model was the view that the project officers should adopt an holistic and systemic approach to their work. An holistic view of learning suggests that individual components cannot be meaningfully considered, or taught, in isolation from one another. To make sense there must be some synthesis or meaningful combination or integration; the parts only make sense in relation to one another.

This view also suggests the importance of adopting a systemic approach to viewing and framing problems. Through considering entire systems, as networks, webs of relationships, or interdependent processes it is possible to see how the various parts or sections relate to one another. Only then can meaningful intervention strategies be considered.

In the context of workplace learning and reform in the automotive industry, an holistic perspective suggests the importance of gaining an overview of the entire plant with its multiple systems and sub-systems in relation to one another. It implies looking at how the plant sits in relation to the wider enterprise and industry context - and even how the industry is placed within broader national and historical contexts.

An holistic perspective also has implications for the way teachers consider learners. The learner is not seen merely in terms of a particular skill or competence being taught, but as a whole, as a complete person. An holistic view of the learner implies recognition of and respect for the individual as unique. It suggests that the learner's history, feelings and perceptions are important to the learning process. Writers such as Rogers[12], and Salmon[13] have stressed the importance of teachers recognising the importance of the way their learners see the education or training process. The learner's perceptions, shaped by previous experiences and understandings, play a fundamental role in determining how new information or understandings may be incorporated (or rejected) by the learner.

It is also important that learners be seen not only as whole individuals, but as individuals operating within social networks and systems. Kazemak and Kazemak [14] have stressed the importance of understanding adult literacy issues within a systemic framework. This type of analysis recognises the importance of systemic and historical factors in shaping the way individuals develop. The systems may be social, family and cultural; they may be political and institutional. In a workplace context it is important to consider the systems of work organisation, the management, control and authority systems, the informal communication and peer support systems and so on.

An holistic perspective recognises and values the individual as a whole person. It also sees the significance of broader systems and contextual factors which impinge upon the individual.

4.3 Inclusive Curriculum

A recent report on developing inclusive adult literacy, language and numeracy curricula points out that curriculum developers are not always aware of the way curriculum is shaped by unconscious attitudes and values about issues such as gender, ethnicity and culture[15]. When curriculum is developed without a conscious awareness of these issues it may act as a force to alienate and marginalise groups of individuals who do not conform to the unconscious expectations of the curriculum developers. Thus education, training and assessment practices may be discriminatory and create disadvantage, although such outcomes may be quite unconscious.

The integrated model is based upon the desirability of maintaining a *conscious* awareness of issues of gender, ethnicity and culture. It adopts a conception of difference as positive rather than deviant. Shore and her colleagues point out that,

> "Commonly, adult literacy, language, and numeracy learners are individuals who are outside the 'taken for granted' culture and who are therefore disadvantaged by the very society in which they are being asked to participate."[16]

The integrated model seeks to redress such disadvantage. It thus sees differences, in language, culture, ethnicity, gender, etc., as positive attributes within the working-learning environment, rather than as deficits or deviations from the norm. Conceiving difference as positive is necessary to create and sustain an inclusive curriculum.[17]

Thus the model promotes the idea of mixed ability, multi-ethnic and multi-lingual learning groups which reflect the composition and work groups of the workplace. Within these inclusive (rather than streamed) groups, differences of gender, culture, language and ethnicity are harnessed as positive attributes for effective learning.

4.4 Assessment Processes

The concept of inclusive curriculum extends to approaches towards assessment. Shore and her colleagues note;

> "The challenge in adult literacy, language and numeracy curricula is to develop and sustain assessment procedures that do not systematically assess as deficit those outside the dominant culture."[18]

Where there is a commitment to principles of access and equity, this challenge must also extend into assessment for vocational education and training. Critiques of standardised testing have shown how seemingly "neutral" tests may in fact carry considerable "blindness" (to gender, ethnicity or cultural issues) or bias. Edelsky cites research which shows how many tests actually assess the learner's similarity to the individual(s) who set the test rather than the knowledge or skill which is supposedly being tested.[19]

Frank Smith[20] is another researcher who has described "The Tyranny of Testing" and its educational consequences. The philosophy of the integrated model was to avoid the "tyranny" whilst ensuring that participants in the training were given every opportunity to develop and demonstrate their skills within meaningful activities which were integral to their workplace.

The assessment processes were competency based and outcomes oriented. They were also informed by an approach which suggested that the adult learners themselves, as well as their peers and superiors within the workplace, should have a hand in designing the assessment processes. Such an approach is consistent with the principles of learner centred assessment advocated as good practice in adult education.

> "Learner centred assessment departs from the narrow focus on measurement and testing to a broader view of evaluation, one which integrates skills and content, foregrounds observation, documentation and self assessment, links assessment with curriculum and instruction, and diversifies assessment procedures for different purposes and audiences (Lytle & Botel, 1988). Adult learner participation and ownership are considered central to the learning process so that learner centred assessment is participatory, with adults necessarily taking an active role in designing their own assessment. ... even though the adults initially present themselves as lacking reading and writing skills, they have been involved in literacy learning throughout their lives. Any assessment of adults as learners must begin with that assumption." [21]

Such learner centred approaches are also consistent with trends towards collaborative assessment processes in vocational training.[22] Caulley[23] characterises these learner centred and collaborative approaches to assessment as fifth generation approaches. He suggests they are most appropriate for the new post-Taylorist industrial relations and for the development of effective workplace learning environments.

4.5 Conceptions of Literacy

The integrated model is also premised on contemporary notions of literacy being socially and contextually determined. Such an understanding suggests there is not one English literacy, fixed and finite, for everyone to learn to a pre-determined standard; but rather a multiplicity of literacies which operate in particular contexts and situations. Thus what constitutes "correct" or even effective literacy is not universal but particular; what is most appropriate depends upon the particular context and circumstances. The literacy of the board room may be very different to that of the factory floor, the literacy of one manufacturing plant may be quite different to that of another. The language and literacy of employees reflects their particular social and cultural contexts.

Recent research[24] has demonstrated the importance of recognising that the way we communicate with words, both in the spoken form and in writing, is very much shaped by the particular contexts, situations and purposes we face. It has also become apparent that the prevailing social networks, and the relationships of power which structure those networks also have a profound effect in shaping language and literacy practices.

This collective body of research is suggesting that educators, whether in schools, communities or workplaces, need to be much more sensitive (than has traditionally been the case) to the particular nuances of language and literacy in context. The context itself affects meaning; "common" words have different meanings in different contexts (as we see in the case studies on the warehouses for instance - where "killing" and "binning" become everyday occurrences).

The integrated model was premised on the idea that the particular language and literacy of each plant or workplace could be used to develop the training curriculum. There was a conscious attempt to maintain a fidelity between the language of the plant and the language/literacy embodied in the curriculum. However it is important to note in this context that the workplace was perceived holistically, not merely in terms of the shop floor. Thus the model also draws upon the work of critical literacy theorists who point out that narrow functionalist notions of literacy may be ultimately disempowering for learners

Ira Shor[25] defines critical literacy as,

> "analytic habits of thinking, reading, writing, speaking, or discussing which go beneath surface impressions, traditional myths, mere opinions, and routine clichés; understanding the social contexts and consequences of any subject matter; discovering the deep meaning of any event, text, technique, process, object, statement, image, or situation; applying that meaning to your own context."

As Lankshear[26] notes,

> "being critical implies knowing the object of criticism very closely and accurately; knowing it 'through and through' by means of careful analysis."

Thus critical literacy implies much more than correctly filling the blanks on a form; it suggests the ability to fully comprehend and consider the purpose of the form. Critical literacy implies asking *why*, and who, as well as what, when, where and how? What is commonly referred to as "reading between the lines" is just as important, sometimes even more important, than decoding the surface meaning of a text. Critical literacy theory suggests the need for readers to 'read the world' as well as the word. Reading the world implies having a critical understanding of the way readers are positioned by writers. That is to say, writers make certain assumptions about their readers and readers need to be aware of these assumptions. Critical literacy implies being able to 'read against the grain', to challenge the assumptions and position of the writer. Such skills move beyond simplistic notions of reading to de-code or comprehend the writer's meaning.

Critical literacy theory also suggests that language and literacy practices reflect power relations within social settings. Thus the language and literacy of the shop-floor is not necessarily the language and literacy of power and influence within the workplace. The reality of the shop floor must be reflected accurately within the curriculum to enable shop floor employees to relate to and engage in learning experiences. However the curriculum also needs to move beyond shop floor language and literacy if it is not to restrict employees in their range of communication competencies. This perspective promotes the development of a critical and holistic understanding of the workplace and its operations. It suggests that the language (and literacy) of shop floor operators needs to be embraced, consolidated, extended and linked to that of managers, customers and the broader society through processes of critical dialogue and enquiry.

4.6 Whole Language

Whole language theory suggests that literacy development is best promoted through learners' engagements with reading and writing experiences which have genuine social purposes and relevance for the learners. This view sees reading and writing processes as language processes, and as such, it argues for close connections between reading, writing, talking, listening and thinking. It suggests that the acquisition of literacy skills can follow a broadly similar path to the way infants develop spoken language. Whole language theory sees literacy processes (like talking and listening) as essentially and profoundly social in nature.

A whole language view of literacy also suggests that literacy acquisition should not be viewed as mastery of a series of discrete sub-skills, but rather as the progressive development of an holistic language process which is shaped by socio-cultural circumstances and purposes as well as psycho-linguistic processes. Harman and Edelsky attempt to sum up the implications for teaching which derive from a whole language perspective;

> "With language taking a supporting - although still essential - role, the actual classroom practice emanating from this whole language set of beliefs avoids workbooks, phonics skill sheets, basal readers, controlled vocabularies and kits. Instead, it focuses on what adults and children do with language and why: make contact, label, organize, remind, play, imagine, threaten, inform, persuade, insult, entertain, soothe, and so forth, emphasising use of language; that is real talking,

> reading, writing, with stories, recipes, letters, labels, notes, tickets, games, maps, magazines, newspapers, lists, reports, songs,journals, poems,menus, and books ... It is this set of beliefs about language acquisition and these and other implied classroom practices that we mean by whole language."[27]

A whole language view suggests that reading is not best thought of as a simple process involving the transfer of meaning; but rather, as Frank Smith[28], Brian Cambourne[29] and others[30] have pointed out, as an active thinking process involving interpretation, anticipation and the construction of meaning; - a construction which inevitably takes place within a social context. A whole language perspective stresses the importance of prior knowledge in the reading process, suggesting that learner readers will perform best when learning to read with materials which reflect their socio-cultural and linguistic environment.

This perspective is also informed by work from teacher-researchers documenting the development of writing proficiency with learner writers. Researchers such as Graves[31], Murray[32], and Calkins[33] have highlighted the importance of allowing learner-writers to experience the successive stages of the writing process. Like reading, the writing process is seen as one involving the discovery and development of meaning and as such the process is also shaped by multiple social conventions. Within this approach the writing teacher's task becomes one of helping writers to work out what it is they want to say, and helping them find the most effective ways of saying it. Within a whole language approach the writing is not 'exercises' or activity sheets, but writing for a real purpose and a genuine audience. Providing appropriate models, exposing and discussing the conventions of various genres and working through the writing process are seen as key strategies leading to proficiency.

Whilst the integrated model is concerned with workplace education and the processes of workplace change, the model is supported by the central tenets of the whole language perspective; that reading and writing should be concerned with meaningful communication, for genuine purposes; that literacy development is fundamentally tied to language and language development; and, that language and literacy processes are profoundly social and cultural.

4.7 Active, Experiential and Enquiry Based Learning:

Another theoretical perspective which gives support to the integrated model is that which views learning as most effective when it is an active, experiential process typified by involvement and enquiry. The term experiential learning has different meanings for different people. However various exponents or advocates of experiential learning tend to share some common understandings as Susan Warner Weil and Ian McGill note;

> "a common assumption operates about what we mean by 'experiential learning', eg. 'learning which arises from the first hand experience of the learner' (Boud and Pascoe, 1978) or something to do with the notion of 'direct encounter' (Keeton and Tate, 1978). We may all speak about experiential learning as a vehicle for change.

> We resonate to words like 'involvement' or 'relevance'. ... We are likely to convey to each other some dissatisfaction with the status quo, and we may refer to our efforts to challenge or change it in some way."[34]

This view of education, which promotes the engagement and involvement of learners in direct, first hand experiences is reflected in the methodology of the integrated model. It is a view which sees educational processes as synonymous with change processes and it places a high value upon the direct experiences of the learner, and upon the need for careful and critical thinking (and talking) about those experiences. Such thinking, often referred to as reflection, or critical reflection, also needs to encompass attention to affective as well as cognitive factors. Attitudes and feelings are as much a part of learning experiences as ideas or thoughts and they are key factors in the processes of managing change.

Such a view also places a high premium upon learners being actively engaged in asking questions about their world and their relationship to it. It sees the learning process as one of enquiry. Curriculum, is thus structured around investigation and enquiry rather than pre-determined sections of content. The teaching-learning processes are driven by the questions (rather than the answers) and the questions are those of the learners. Harste[35] explains that such a curriculum is ultimately about learning to learn; it is an approach to learning which not only generates answers (as well as new questions) for now, it promotes the development of enquiry skills to answer the questions of tomorrow.

The integrated model reflects these understandings of teaching-learning-change processes. The model promotes active, experiential and enquiry based learning.

4.8 Managing Change

The integrated model is informed by a perspective on managing change which suggests that genuine and sustained change in behaviour is unlikely to occur unless there is a corresponding (and usually prior) shift in attitudes, values and beliefs. This means that bringing about real workplace change involves helping people to change their understandings and their conceptions. As esoteric as this may sound, it is nevertheless quite fundamental.

In "Rethinking Skilling for a Restructured Workplace" Professor Ford[36] summarises some of the areas in which fundamental change is required, in each case the changes involve shifting attitudes and beliefs as well as changes in behaviour. He summarises the key shifts in the table on the following page.

Professor Ford's list includes reference to shifting conceptions of learning, however changes in understandings about language, literacy and numeracy could be added. None of these "key shifts" can take place unless the individuals involved in these processes of change can themselves make substantial "shifts". The difficulty of making such changes is highlighted by research which has exposed the extent to which individuals may be unaware of their own underlying philosophies, values and beliefs[37].

Yet it is these underlying value systems which are substantially responsible for shaping behaviour.

Key shifts are:	
From	**To**
education & training	skill formation
retraining	recurrent skill formation
on-the-job training	on-the-job learning
instruction & training	involvement & learning
individual training	group & network learning
occupational skilling	career skilling
functional skilling	integrated skilling
narrow skilling	broad skilling
craft mysteries	shared learning
technical skilling	socio-technical skilling
competence	performance
learning leave	learning time
lean organisations	skill reserves
skill demarcations	skill integration
skill profiles	skill dynamics
occupational structures	career dynamics
division of labour	balance of skills
labour markets	skill markets

The approach which NALLCU is advocating is a people centred approach. As mentioned above in relation to collaboration, this approach recognises that it is people who must bring about the changes. The approach is premised on ideas of evolution and developmental change processes, it is consistent with principles of good practice in adult education, with notions of continuous improvement and with the development of "learning organisations"[38].

4.9 Peer and Group Learning

If language, literacy and learning are seen as fundamentally social in nature it follows that the creation of supportive social settings (as generally happens with infants learning to talk for instance) is important to facilitate learning. This view suggests that the most valuable resources for supporting the learning processes in a workplace are not books, videos, curriculum packages or training kits, but people.

Within the workplace context, an employee's peers are likely to be most important in shaping his/her attitude and approach to learning. Crina Virgona has reported on the value of peer group learning within workplace contexts. She notes:

> "The peer tutoring process facilitates an integrated system of learning which responds easily to workplace issues. The tutors provide support for learners as they apply their learning to their work situation and, as a result, peer tutoring becomes a force on the shop floor."[39]

The peer tutoring model which Virgona describes is not identical to the integrated model described in this report. However it shares important common assumptions. In particular, both models share the belief that workers will be more inclined to engage with training programs if they feel they have support from a 'trusted other' who will provide guidance and support. This perspective recognises that learning, particularly adult language and literacy learning, involves some degree of risk taking. For those with limited or unhappy school experiences it often seems so much easier not to try than to engage and risk again the possibility of failure. Encouragement from peers is a powerful motivating force which can be harnessed to support learning.

The importance of peer learning and social processes are more fully appreciated when workplace learning is seen in terms of system-wide processes of change rather than just individual skill development. If workplace reforms and processes of continous improvement are to become systemic, they will require effective networks of interaction and support throughout the enterprise. Systemic changes cannot be implemented and sustained by individuals in isolation. Thus learning strategies which promote effective interaction, networking and group work are more likely to provide the basis for processes of workplace reform.

Whilst it was clearly understood that some employees would choose to study independently, (and that some enterprises might want to promote such individual initiatives[40]) the emphasis of the integrated model was upon the development of a learning culture within the workplace. The integrated model draws support from the idea that workplace learning can be facilitated by encouraging groups of employees to support one another in training-learning processes. This perspective suggests the importance of effective learning groups and relationships. It is a perspective informed by the work of teachers, researchers and workplace practitioners from Rogers[41], and Knowles[42] through to Johnson and Johnson[43], Kofman and Senge[44], and Ennis and Davidson[45].

Endnotes

1. In particular, *Australia's Language: The Australian Language and Literacy Policy* noted; "It is critical that English language and literacy training be integrated into vocational training courses and eventually tied into a broader concept of communications training ..." [Dawkins, J. (1991) *ALLP: Companion Volume*, AGPS, Canberra, p.22]. The *Report of the Workplaced Education Project* in the vehicle manufacturing industry also recommended "integrated strategies" for curriculum development to address language and literacy issues, see Sefton, R. & O'Hara, L. (1992) Victorian Automotive Industry Training Board, Melbourne.

2. See for instance, Boomer, G. (1982) *Negotiating the Curriculum*, Ashton Scholastic, Sydney; and "Negotiation Revisited" in Green, B. (ed.) (1988) *Metaphors and Meanings: Essays in English Teaching*, Australian Association for Teachers of English, Melbourne. See also: Nunan, D. (1988) *The Learner Centred Curriculum*, Cambridge University Press, London; and (1992) *Collaborative Language Learning and Teaching*, Cambridge Uinversity Press, London; and, Freire, P. (1977a.) *Pedagogy of the Oppressed*, Penguin Books, Ringwood, Victoria.

3. Knowles M, (1990) *The Adult Learner: a neglected species* (4th. ed.) Gulf Publishing Co., Houston. p.125

4. Knowles, ibid. p.126

5. Knowles notes, "To the cognitive, humanistic, and adult education (andragogical) theorist the individual learner's own perception of what he (sic) wants to become, what he (sic) wants to be able to achieve, at what level he (sic) wants to perform, is the starting point in building a model of competencies; to the behaviourists such subjective data are irrelevant." ibid. p.126

6. Knowles, ibid. p127

7. Tough, A. (1979) *The Adults Learning Projects: A Fresh Approach to Theory and Practice in Adult Learning*, (2nd. edition) Ontario Institute for Studies in Education, Ontario.

8. Freire, P. ibid. p.65. Ann Berthoff says of Freire; "Dialogue is an encounter, a close encounter, a social encounter ... Dialogue is not just conversation; it is dialectic and reflective. ... Freire calls his classroom a "culture circle"; for him to speak of "collaborative learning" would be redundant: there is no other kind. Learning is necessarily collaborative." Berthoff, A. (1990) "Paulo Freire's Liberation Pedagogy" in *Language Arts*, Vol. 76, No.4. April.

9. DEET, (1988) *Good Practice in Australian Adult Literacy and Basic Education*, October.

10. DEET, (1992) *Good Practice in Australian Adult Literacy and Basic Education*, December.

11. For further discussions of these issues see O'Connor, P. (1993) "Negotiating Out of Neutral in Workers Literacy" in *Critical Forum*, Vol.2. No.3. December; and, Collins, M. (1991) *Adult Education as Vocation: A Critical Role for the Adult Educator*, Routledge, London.

12. Rogers, C. (1985) *Freedom to Learn in the 80's*, Charles E. Merrill Pub. Co., Columbus, Ohio.

13. Salmon, P. (1988) *Psychology for Teachers:an alternative approach*, Hutchinson, London.

14. Kazemak, C. & Kazemak, F. (1992) "Systems Theory: A Way of Looking at Adult Literacy Education" in *Convergence*, Vol.XXV., No.3.

15. Shore et.al. note that curriculum work is not always explicit about the fact that: "all groups have 'culture' or 'ethnicity'. For example, what is significant about white, Anglo-Saxon, masculine culture is its taken -for-granted position as the dominant, valued culture; this obscures its very ethnicity." Shore, S., Black, A., Simpson, A., & Coombe, M. (1993) *Positively Different: guidance for developing inclusive adult literacy, language and numeracy curricula, [Executive Summary]* Department of Employment, Education and Training, Canberra, p.2.

16. Shore et.al. ibid. p.5.

17. "If difference is conceived as positive rather than deviant in the educational system, all participants, (learners, educators, and managers) can be encouraged to challenge the hierarchy of culture that exists in our society in order to co-create a more equitable and socially just future for all." Shore et.al. ibid. *Executive Summary*, p.2.

18. Shore et.al. ibid. *Executive Summary*, p.6.

19. Edelsky notes, "Because tests tap knowledge and language acquired through one's experiences as a member of a particular gender, class, culture, and religion, scores reflect social categories like socioeconomic status at least as much as they predict future performance." Edelsky, C. (1991) *With Literacy and Justice for All*, The Falmer Press, London, p.145-6.

20. See Smith, F. (1988) *Insult to Intelligence: the bureaucratic invasion of our classrooms*, Heinemann, Portsmouth, N.H. p.129-165.

21. Lytle, S. & Schultz, K. "Assessing Literacy Learning with Adults: an ideological approach" in Beach, R. & Hynds, S. (ed.) (1990) *Developing Discourse Practices in Adolescence and Adulthood*, Vol.XXXIV. Advances in Discourse Practices, ABLEX Pub. Co., Norwood, New Jersey.

22. See for instance Kearney, P. (1992) *Collaborative Assessment Techniques: for competency based training and enterprise learning*, Artemis Publishing, Hobart.

23. "Fifth generation evaluation is an integral part of the Beta management style. Beta managers share power, have a collaborative relationship with their staff and encourage two-way (win-win) communication with them to achieve maximum productivity. Beta managers influence their staff by being assertive rather than controlling and aggressive. Their skills include negotiating - persuading rather than directing. A tolerance for error will be required as employees learn to make decisions resulting in greater motivation, responsibility, quality control and productivity. The fifth generation approach involves the combination of a certain evaluation approach with a certain management style." Caulley, D. "Overview of Approaches to Program Evaluation: The Five Generations" in Guthrie, J. (1993) *Australian Public Sector: Pathways to Change in the 1990's*, I.I.R.Conferences Pty.Ltd., North Sydney, p.124-133

24. See for instance, Brice-Heath, S. (1986) "The functions and uses of literacy" in de Castell, S., Luke, A., & Egan, K. (eds) *Literacy, Society and Schooling: A Reader*, Cambridge University Press, Cambridge. p. 15-26; and in (1990) *Ways with Words: language, life and work in communities and classrooms* Cambridge University Press, Cambridge. See also: Levine, K. (1986) *The Social Context of Literacy*, Routledge & Kegan Paul, London; Mikulecky, L. Ehlinger, J. & Meenan, A. (1987) "Training for Job Literacy Demands" in *EEE706 Literacies and the Workplace*, Deakin University, Geelong; Street, B. 1984, *Literacy in Theory and Practice*, Cambridge University Press, Cambridge; and in "Literacy Practices and Literacy Myths" in Saljo, R. (ed.) (1988) *The Written World*, Springer Series in Language & Communication, Vol.23. Springer Press.

25. Quoted in Lankshear, C. (1994) *Critical Literacy* Occasional Paper No. 3, Australian Curriculum Studies Association Inc., ACT.

26. Lankshear, ibid. p.9.

28. Harman, S. & Edelsky, C. (1989) "The Risks of Whole Language Literacy: Alienation and Connection" in *Language Arts*, Vol.66. No.4. April revised and reprinted in Edelsky (1991) ibid.

28. See Smith, F. (1973) *Psycholinguistics and Reading*, Holt, Rinehart & Winston, New York; (1978) *Understanding Reading: a psycholinguistic analysis of reading and learning to read*, Holt, Rinehart & Winston, New York; (1982) *Writing and the Writer*, Heinemann Educational Books, London (1988) *Joining the Literacy Club: Further Essays into Education*, Heinemann Educational Books, London.

29. Cambourne, B. (1988) *The Whole Story*, Ashton Scholastic, Aukland.

30. See for instance, Harste, J. Woodward, V.A. & Burke, C.L. (1984) *Language Stories and Literacy Lessons*, Heinemann, Portsmouth, N.H.; Goodman, Y. Watson, D, & Burke, C.L. (1987) *Reading Miscue Inventory: alternative procedures*, Richard Owen Pub.

31. Graves, D. (1983) *Writing: Teachers and Children at Work*, Heinemann, London; Walshe, R.D. (ed.) (1981) *Donald Graves in Australia: children want to write*, Primary English Teaching Association, Rozelle, N.S.W.

BEST COPY AVAILABLE

32. Murray, D.M. (1968) *A Writer Teaches Writing*, Houghton Mifflin Co., Boston

33. Calkins, L.M. (1986) *The Art of Teaching Writing*, Heinemann, Portmouth, N.H.

34. Warner-Weil, S., & McGill, I. (eds.) (1990) *Making Sense of Experiential Learning: Diversity in Theory and Practice*, The Society for Research into Higher Education & Open University Press, Buckingham, p.19.

35. Harste, J.C. (1993) "Curriculum for the Millennium: Putting an Edge on Learning Through Inquiry" in *Literacy for the New Millennium: Conference Papers*, Australian Reading Association, Melbourne.p.71-81

36. Ford, B., (1990) *Rethinking Skilling for a Restructured Workplace: Occasional Paper*, Commission for the Future, AGPS, Canberra.

37. Argyris, C. (1976) "Theories of Action That Inhibit Individual Learning" in *American Psychologist*, Vol. 31., No.9. p.638-654

38. See for instance the work of scholars and researchers such as: Senge, P. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organisation*, Double Day New York; Schon, D. (1987) *The Reflective Practitioner*, Jossey-Bass Inc., SanFransico; Watkins, K. (1991) *Facilitating Learning in the Workplace*, Deakin University, Geelong; Ford, G.W. (1990) *Rethinking Skilling for a Restructured Workplace: Occasional Paper*, Commision for the Future, AGPS, Canberra; Mathews, J. (1989) *Tools of Change: new technology and the democratisation of work*, Pluto Press, Sydney; Argyris (1976) ibid.

39. Virgona, C. (1991) *Peer Tutoring: language and literacy training for NESB workers in industry.*, Adult Migrant Education Services, Melbourne, p.29.

40. Such as at Mercedes-Benz where the training workbook system lends itself to individual study.

41. See for instance, Rogers (1985) ibid.

42. Knowles, (1990) ibid.

43. Johnson, D.W. & Johnson, F. (1991) *Joining Together: Group Theory and Group Skills*, Allyn & Bacon, Sydney.

44. Kofman, F. & Senge, P.M. n.d. "Communities of Commitment: The Heart of Learning Organisations" in *Organisational Dynamics*

45. Ennis, R. & Davidson, D. n.d. *A Life of Its Own: Adult Literacy Work in a Small Group*, Council of Adult Education, Melbourne; Ennis, R. & Earl, N. (1990) *Learning in Groups: A Resource for Adult Basic Education,* Workplace Basic Education Department, Council of Adult Education, Melbourne.

Chapter 5
Methodology

This section spells out the methodology that was to be adopted in each of the six different enterprises. This work was approached at the company level as a coordinated series of action-research projects. It was recognised that it would be necessary to approach the project with a number of prerequisites in place. These included:

1. A conceptual framework which guided the actual design, development and implementation of the pilot programs (see Chapter 3).

2. An agreement with all the parties on what was to be achieved, how this would occur and the conditions under which the project would operate.

3. A management structure to support and guide the project officers.

4. The right people to conduct the project at enterprise level.

The methodology guiding this work is considered in five sections. It is important to note that in practice these five aspects of the approach were interdependent, each informing the other. However for ease of explanation they will be considered consecutively.

The five aspects of the methodology are:

- Project Management
- Selection of Staff
- Developing and Conducting the Pilot Programs
- Documenting the Project
- Analysing the Results

5.1 Project Management

It was anticipated that, from conception and establishment through to documentation, evaluation and completion, each of the projects would be supported and monitored by the unit's manager, curriculum planning officer and other staff. This was intended to ensure that:

- the integrity of the methodology would be maintained in each project;
- the negotiated tripartite commitment would be maintained;
- problems of an industrial, political or management nature that arose from the projects would be dealt with outside the day to day work of the project officers;
- there would be accountability for the use of public funds.

A common process was to be followed for the establishment of each project. Initially companies were to be approached with a proposal for the development of a project in one of their plants/departments. Once agreement was reached with the company and the union that a project would be undertaken, the conditions under which the project would proceed and the parameters of the project were to be negotiated and then documented into a Project Brief for ratification by all parties.

In particular, the following expectations were included in the brief in each case to maintain the integrity of the projects:

- that a tripartite steering committee be established and maintained throughout the project;
- that project officers be given open and direct access to all the stakeholders at every level - managers, supervisors, shop floor employees, union representatives;
- that office space be found for project officers as close as possible to the shop floor to allow for access to personnel and to ensure the development of relationships conducive to the conduct of their projects;
- that project officers would develop and trial the curriculum;
- that a dedicated learning group, established and maintained for the duration of the program, would be formed for the trial program;
- that a comprehensive case study would be written to document the project, including processes, methods, specific features and outcomes.

While these conditions may appear to be unproblematic, it was recognised that in most cases they would represent a departure from previous accepted practice within companies for the design, development and conduct of training, and that without the explicit stipulations they may not universally occur. This framework was intended to give project officers the official right of way to conduct their projects in the appropriate manner to achieve the expected outcomes, and it was recognised that these conditions would be an essential prerequisite for successful completion of the projects.

Additionally, the Project Brief would cover issues such as the role of the Steering Committee, roles and responsibilities of the various players, the expected timeframe, the provision of, and payment for, services and materials. In general this would include the company being responsible for providing office space and supplies, provision of computing equipment, desk top publishing of final curriculum documents, and time for the stakeholders to be involved in the process. NALLCU would provide the time of the project officers.

In order to ensure that case studies were well documented, one NALLCU Curriculum Officer was to be given the task of assisting with documentation and conducting interviews.

5.2 Selection of Staff

To achieve the desired outcomes, particular attention was to be given to the selection of skilled staff to be involved in the pilot projects. In particular, staff were expected to have:

- demonstrated ability to work collaboratively with a wide range of people and in a variety of settings (e.g. industry, labour market, TAFE and traditional education);
- to be culturally and politically perceptive, to communicate and interact effectively and to act with empathy and professional integrity;
- a genuine interest in and an enthusiasm to learn about the workplace, its processes, technology, language and practices;
- ability to think conceptually (systemically, creatively, analytically and laterally) and the ability to draw creatively on professional and life experience;
- a high degree of tolerance for ambiguity, uncertainty and change, a capacity for initiative, innovation and risk taking, and for devising pragmatic solutions;
- respect for the skills, attributes and potential of the employees;
- the ability to develop inclusive[1] and holistic curriculum which embraces broad concepts of literacy and language development[2] and to employ the most appropriate strategies and learning experiences to develop language, literacy and communicative skills;
- the ability to present ideas/information creatively using a variety of strategies to target different learning styles;
- good organisational and management skills, including time management and establishing priorities.

5.3 Developing and Conducting the Pilot Projects

It was acknowledged that the project officers would be entering the plants with challenging developmental roles. They would not be expected to be delivery agents for pre-packaged curriculum, but to have a key role in the development of the curriculum. However, they would be expected to be much more than curriculum developers. Their multiple roles were to involve acting as action-researchers, workplace communication consultants, curriculum developers and vocational trainers. It was expected that they would be constantly aware of their roles as change agents and of the expectation that what they were doing should "make a difference". It was also anticipated that at times they would also be cast in roles such as that of advocate and/or mediator.

While it was acknowledged that circumstances and expectations would shape their practice, they were each expected to demonstrate that they were able to accommodate multiple perspectives whilst retaining their principles and the integrity of their professional and ethical stance as educators. It was anticipated that they would remain committed to the development of learners and to the growth of a workplace learning culture.

The methods adopted by the project officers were to be shaped in response to the particular contexts in which they were working and it was recognised that they each would have their own individual styles and approaches.

The principles of the integrated model (chapter 3), and the overall objectives of the project (see chapter 2) were to form the basis for certain methodological principles and processes. Whilst the project officers were expected to use their own initiative and to operate with some autonomy there were broad methodological guidelines established which were expected to be consistent across each of the pilot projects. The work of the project officers was to be structured and deliberate. These guidelines can be described in three interrelated categories;

* Guiding educational principles emerging from the integrated model;
* Specific tasks or expectations which were part of the project officer's function;
* The curriculum development process.

1. Guiding Educational Principles

The rationale and philosophy of the integrated model was discussed in more detail in Chapter 3 of this report. This rationale suggested that the project officers would:

- address issues of workplace reform and change (with the aim of promoting win-win scenarios);
- promote the development of key competencies (Mayer);
- promote developmental learning opportunities which recognise and build upon the individuality, diverse learning needs and potential of the non-trades employees;
- adopt the view that all stakeholders in the project were learners, including the project officers themselves.

2. Specific tasks or expectations

There was an expectation that project officers would:

- work from a base on the shop floor, and be accessible to shop floor employees;
- initiate and sustain the consultative process at all levels (company management, union, shop floor, etc);
- attend Project Steering Committee meetings and NALLCU staff meetings wherever possible;
- not only develop, but also trial and evaluate the curriculum with employees from the plant/site;
- document their development and evaluation processes and the curriculum for subsequent accreditation and reporting purposes.

3. The Curriculum Development Process

The process of curriculum development was discussed in detail in chapter 3. Project officers would be expected to adhere to the broad guidelines that had been developed for the model of integrated training, and in particular to:

- develop the curriculum from the practices, processes, language and technology of the particular plant/site in which they were based;
- adopt a holistic perspective on the curriculum, the plant, and processes of change (*"What is there to know?"* rather than *"What do they need to know?"*);
- develop inclusive and participatory curriculum (bearing in mind access and equity

issues at all times);
- ensure that any new areas of curriculum become accredited within the framework of the VIC;
- ensure the use of non-discriminatory assessment processes.

5.4 Documenting the Pilot Projects

The way in which the documentation of the case studies was to proceed was influenced by current trends in educational research. In particular, the project was shaped by conceptions of action-research[3] and qualitative research[4]. The following account of the case study methodology is intended to explain the approach to be taken and to outline the expected methodological sequence[5].

The pilot programs were to be designed as a trial of a new approach to developing and implementing training curriculum within workplace contexts. The intent was to demonstrate that integrated approaches could work. In each case there was to be a conscious attempt to stimulate the development of an effective workplace learning culture, to address issues of change in the workplace and to develop a training program which would meet the diverse needs of multiple stakeholders.

The project officers were to be cast in the role of teacher-researchers. They were to be responsible, not only for the development and conduct of the training program, but also for its documentation and for reflection upon the experience - (and then documenting the results of that reflection). They were not expected to be neutral. They were clearly to be players in the process, and it was recognised that they would bring to the task their own particular values and aspirations[6].

Importantly, they were to be asked to carefully document the processes, resultant curriculum and salient features of strategies and techniques used in the delivery of the pilot programs. In particular they would be expected to document the ways in which they identified and met the literacy, English language and numeracy needs of the program participants in the context of the accredited training. Project officers were to be requested to keep records of these features of their work and to write them up for the case studies.

It was understood that the work of each project team would be shaped by the history, culture, politics and practices of the particular workplace they entered. The case studies would be expected to reflect these factors and convey some sense of the diverse, subtle and significant differences of workplace cultures which make up the vehicle manufacturing industry in Australia[7].

One aspect of this project was to be directed towards the investigation of to what extent integrated approaches to training would affect attitudes towards training, workplace learning and change.

Writing about vocational training and workplace reform Professor Ford notes:

> "There is an urgent need for people to understand their traditional 'mind sets', a need driven by the very pace, diversity and pervasiveness of interrelated organisational transformations. Often many years of experiential learning need to be replaced by new frameworks"[8]

Elsewhere in the same paper he speaks of *reconceptualising* production and service systems, of *major conceptual shifts*, and of the need for *revisualising* programs and policies[9].

There was, therefore, to be an endeavour to explore and document the 'mind sets', perceptions, understandings and reactions of the various stakeholders involved in the pilot projects. It was expected that some of the changes which would be of interest would not be easily quantified in numerical terms, and that they would need to be described. The stakeholders being interviewed for the case study were to be fully informed about the nature of the research. The process of interviewing, transcribing and using individual comments were to be explained. Permission would be sought to include individuals' comments, and opportunities provided for amendment, elaboration or withdrawal. Thus qualitative research methods were expected to be important[10].

The development of the case studies was expected to occur in three phases:

1. Data Gathering and Documentation

The intention was to give a comprehensive account of projects, including the processes, strategies, outcomes and remarkable features of each. Thus several interrelated strategies would be used, including participant observation, detailed documentation by project officers, interviews and analysis of documents.

2. Reflection and Inductive Data Analysis

The second phase of the research, which was not to be entirely separate from the first, would involve the analysis of the data gathered. Ongoing reflection, analysis and discussion about work in progress would be part of the day-to-day activity of project officers. These discussions would be related to the on-going action-research project which was to be considered an integral and important part of the unit's operation. This approach was consistent with the practice of naturalistic or qualitative research.

3. Collaborative writing and negotiated outcomes

It was expected that the analysis of the data would lead naturally into the drafting of the case studies. A process of revising and re-drafting was anticipated, particularly since part of the intent was to record interpretations of events which would need to be double checked and ratified.

Two quite different types of written products were anticipated from each pilot project[11]. There would be an enterprise specific learning program which would remain with the company. This would include details of the learning activities, the company-specific content and data on which they were based, and the assessment tasks.

There would also be a descriptive case study to document each project chronologically and comprehensively. Comprehensive and public reporting was a condition of funding and this would be made clear at the outset of each project. It was hoped that the companies and the individual stakeholders would be pleased to identify themselves in the published document. To achieve this objective it was expected that the final report would be subject to scrutiny by all the stakeholders.

It was planned that drafts of the case studies would be prepared by Peter Waterhouse, the project teams and other staff. These drafts would be circulated to the stakeholders for comment. Direct quotations of individuals would be referred back to them for confirmation that they were prepared to be quoted in the given context. Following changes and agreement from the parties directly involved in the project on site, agreement would be sought from the union and the company regarding the content and analysis of the case study.

Finally, each Project Steering Committee would be asked to endorse their case study as a true and accurate representation of the project for publication.

5.5 Analysing the Results

Following the completion of the case studies a process of comparative analysis of the results of each project was to be undertaken, to ascertain the extent to which the aims and objectives of the project had been achieved in each case and to sift through the qualitative data for common themes and issues which may have emerged from the data collected.

In addition it was expected that a post-project analysis would take place to document any new understandings that may have emerged as a result of the project, the implications that these understandings may have for future training practice and the recommendations that could be reasonably made as a result of the experience gained from the project. It was anticipated that this analysis would occur through individual contributions and from group sessions.

5.6 The Final Report

The final process to be undertaken in the project would be ratification of the final report by the Project Management Committee, the industrial partners, the Manufacturers Advisory Group and the National Automotive Industry Training Board.

To this extent it was understood that the final report would reflect the results of these negotiations which may or may not change the content and/or the nature of the report from one of pure reporting of an action research project to one that will also probably reflect the understandings and political positions of the players in relation to the project.

Endnotes

1. See references for inclusive curriculum cited in previous chapter.

2. See references to whole language and critical literacy, cited in previous chapter.

3. The basic orientation of the project was one of action research. Action research stresses the importance of documenting, analysing and critically reflecting upon work in progress. Through conscious and structured cycles of action and reflection the researchers, and often their collaborators, gain new insights and modify their actions. In this way action-research is ideally suited to the development and continuing refinement of professional practice.

   Action research is distinguished from some other forms of research by the positioning of the researcher who does not stand apart, at a distance from the phenomena being researched, but rather is directly involved, seeking to influence the outcomes of the action research processes. In this sense the action-researcher makes no pretence to being detached, or impartial. As players within the action-research process the researchers have an interest in its outcomes. This was the case with this project.

4. Secondly, the case studies have been influenced by qualitative approaches to educational research. Put simply, these research approaches are used to investigate changes in quality or type, rather than quantity or number. They draw upon techniques used by social scientists, such as anthropologists, to study the culture and social dynamics of human populations

5. This section draws upon the work of Dr. Darrel N. Caulley, Senior Lecturer in Research and Evaluation Methodology at La Trobe University.

6. Researchers such as Lather point out that researchers always have an interest in the results or outcomes of their work, although they are not always explicit about this interest. The way experiments are framed, the way environments are controlled and the choice of variables to be taken into account, are all influenced by the values adopted by the researcher. Namenwirth notes:

   > "scientists firmly believe that as long as they are not *conscious* of any bias or political agenda, they are neutral and objective, when in fact they are only unconscious", Namenwirth, M. (1986) in Lather, P. (1993) *Feminist Research in Education: within/against*, Deakin University, Geelong.

7. The term cultures here is intended to reflect not only the multiple ethnic and linguistic groups within the workforce, but also the diverse policies, practices and philosophies of the enterprises within the industry. As the project unfolded it became more and more evident that the companies each have their own cultures - and even within companies there are sub-cultures operating within particular manufacturing plants, warehouses, offices and groups of workers. Differences may be seen for instance between day and night shift workers even within the one plant. The research design was sensitive, as far as possible, to these multiple differences.

8. Ford, G.W. (1990) *Rethinking Skilling for a Restructured Workplace: Occasional paper,* Commission of the Future, AGPS, Canberra, p.2.

9. The Senate report *People and Technology: New Management Techniques in Manufacturing Industry* is also relevant in this context. It gives several pages to the issue of changing attitudes and sums up:

> "If there is a key element ... one that is perhaps more difficult than the others, it is that of *attitudes*. Technologies should not be just installed as if they were the new model of existing machinery. Instead they require *comprehensive change in the whole way of thinking and operating* in particular organisations." (AGPS 1991 p.44)

10. Boud, D. and Griffin, V. (1987) in *Appreciating Adults Learning: From the Learner's Perspective*, Kogan Page, London, note:

> "Qualitative research is not easy; it has its own standards of rigour, and not everyone is capable of doing it. It requires not only research skills but also personal skills. Like any research approach, it is suitable for exploring only some kinds of questions - the meaning people attribute to their experiences, how people perceive themselves and their worlds and how they communicate their understandings to others ... the qualitative approach is the one which we believe is appropriate for an appreciation of learners' perspectives on the experience of learning." (p.9)

It was these sorts of questions; of meaning, attitude and perception which the project sought to document. In these areas even subtle changes can be significant, for as Professor Ford and others have noted, it is these changes in 'mind set' and understanding that are the precursors to genuine and sustainable changes in the workplace.

11. In fact, as the discussion in Chapter 14 indicates, several of the projects created an additional outcome, e.g. the generation of a revised syllabus for the Warehousing Elective.

Chapter 6
Implementation of the Project

6.1 Initial Discussions and Presentations

Initially a concept proposal was presented to the Manufacturers' Advisory Group in early 1993. This was accompanied by a discussion document *Myths, Realities and Possibilities* which had been prepared by the Curriculum Planning Officer, Rosemary Deakin. Once agreement was reached with the industrial partners that companies could be approached, negotiations were able to proceed for the conduct of up to six pilot projects throughout the industry.

First the large enterprises were approached and presentations to each of them occurred in the following few months. In some cases this process was repeated with several different groups from a single company. Of the major manufacturers only GMHAL elected not to be involved at that stage, although there was considerable interest expressed in both the project and its outcomes.

In addition, the AFMEU (Vehicle Division) canvassed some of the smaller companies in relation to enterprise bargaining negotiations that were being undertaken at the time. Subsequent approaches from Mercedes-Benz and Nissan National Parts Distribution Centre led to their involvement in the project.

Further details of the establishment process that occurred in each company are included in the following chapters which document the individual case studies.

The final agreed projects were:

- Foundry Elective at Holden's Engine Company (HEC);
- Warehousing Elective at Ford National Parts Distribution Centre (NPDC);
- The first part (Air Systems) of post-induction training for the VIC (skills, knowledge and elective units across three levels) in Truck & Bus Assembly at Mercedes-Benz;
- The first part of an integrated program for the VIC targeted to the Hardware Manufacturing area of Mitsubishi;
- The first part of an integrated program (knowledge and elective units) for the VIC at Nissan National Parts Distribution Centre (NPDC).
- Level 2 modules of the VIC for the Press Shop at Toyota Altona;

There was an uneven start to projects as negotiations and other company priorities dictated. This is summarised in Table 1.

Table 1 Timelines for Projects

Company	VIC Project	Initial Presentation to Company	Staff Started Work	First Meeting of Steering Committee
HEC	Foundry: elective unit	17 February 1993	22 February 1993	29 March 1993
Ford	Warehousing: elective unit	30 April 1993	20 May 1993	20 May 1993
Mercedes-Benz	Truck & Bus Assembly: core & skills units	19 April 1993	26 May 1993	19 May 1993
Mitsubishi	Hardware Manufacture: core unit	22 March 1993	5 July 1993	22 December 1993
Nissan	Warehouse: core & elective units	11 June 1993	11 August 1993	4 August 1993
Toyota	Press Shop: Level 2 core units	25 February 1993	23 August 1993	17 August 1993

In some instances, at the request of companies, a TAFE College was also involved in the project. This occurred at Holden's Engine Company, where a teacher from the Royal Melbourne Institute of Technology (RMIT) Foundry Studies Department had already been employed to develop the elective unit; at Mercedes-Benz where Outer Eastern College of TAFE had been brought in by the Company to develop some training; and also at Nissan, where the delivery of the VIC was to be covered by Outer Eastern TAFE.

At Mitsubishi in South Australia an existing relationship with Onkaparinga Institute of TAFE (formerly Noarlunga College of TAFE) was extended by the employment of additional staff from the Institute to undertake this project on behalf of NALLCU under the direction of the NALLCU Coordinator on site.

6.2 Project Management

In each case a tripartite steering committee was established and a project brief written, negotiated and agreed. These briefs included all the factors that had been identified as being important to the successful conduct of the projects. They also documented the agreed position that gave the project officers authority to proceed in the way that had been planned and set in place a mechanism to deal with problems as they arose. More importantly they clarified and documented the aims and objectives of the project, the processes that were to be used and the expectations of the parties.

Regular meetings of the project steering committees were conducted throughout the projects, except at Mitsubishi where consultations took place and working groups met but the official tripartite steering committee did not have its initial meeting until December.

6.3 Selection of Staff

Where it was relevant and the staff had the skills and the time to be involved, existing staff were used for project work. It was also found necessary to advertise for new staff in order to provide sufficient project officers to meet the demands of all the projects.

In Victoria, selection of these staff members occurred in a group situation, where applicants needed to demonstrate their competencies in simulated activities that were conducted by consultants brought in for the occasion. The three new staff members selected in this way demonstrated their superior skills, abilities and attributes in line with the selection criteria.

At Mitsubishi in South Australia a selection panel was established at the Company to select a suitable team from interested teachers from the Onkaparinga Institute of TAFE.

6.4 Developing and Conducting the Pilot Programs

In each case the project officers emersed themselves into the life and culture of the plant for the whole of the period of the development and implementation of the pilot programs. They ensured that they understood and took account of the systems, culture and technology of the particular workplace. There was a conscious and dedicated effort to involve as many people as possible in all phases of the program. In some cases this involved the formal conduct of curriculum workshops and in others the involvement was at a more informal level.

The primary focus of each program was that of the enterprise, mostly on continuous improvement, quality, waste elimination, etc. The content was based on the specific workplace and utilised the knowledge and skills of technical staff, managers, supervisers and shop floor employees. Learning outcomes were aligned to the VIC and any gaps were addressed in order to ensure that credits could be gained. Opportunities for achieving key competencies were consciously integrated throughout the learning program in a manner that allowed for development over time.

In the majority of projects, learning programs were built around experiential learning activities and individual and group projects in the workplace. These were augmented by classroom activities and discussion. Competency based assessment was designed collaboratively and included a range of criteria such as presentation of projects to management, observations and testing in practical situations. In one case learning was based on workbooks - a method already adopted by the company for its training programs - designed to be completed on an individual basis. These were trialed by a couple of employees after development was complete. At Mitsubishi the program was not trialed during the period of this project and in the other companies a dedicated group was formed to trial the program. In some instances there were two groups to accommodate shift workers and provide equitable access to the trial program.

Selection of participants for the pilot programs was generally a function of management and the union, so that groups were disparate in terms of background, schooling, workplace knowledge and experience, and language, literacy and numeracy skills. A learning needs assessment was conducted in only two of the companies and a short interview in one other (mainly to ensure sufficient language support was available for those employees with very little spoken English). Knowledge of the workers and their abilities came from the in-depth understanding of the workplace.

Although the projects officially finished in December 1993, the very late start in some cases meant that the program needed to be completed in early 1994.

6.5 Development of Case Studies

1. Data Gathering and Documentation

The intention was to gain rich and detailed pictures of the developments taking place with the pilot programs in each site.

Participant Observation and in-process documentation were used to gain insight into the projects within their particular locations. The Project Officers, the Project Manager, and the Curriculum Planning Officer were at various stages, involved in this role. In particular, Peter Waterhouse was often cast as the participant observer.

It was made clear to the stakeholders from the beginning that the development processes would be closely monitored and documented. Peter was often introduced within this context, as the scribe for the project. His observations and field notes have contributed substantially to the case studies.

However all staff with NALLCU were given a sturdy minute book and encouraged to maintain a professional journal to record their observations, reflections and discoveries as educators in the workplace. Some time in staff meetings was dedicated to discussing the issues and insights emerging from their work and all staff were made aware of the importance of documenting these development processes[1]. In addition, project officers maintained comprehensive documentation on the curriculum, all learning activities, teaching strategies, assessment tasks, and outcomes. The development of industry and key competencies were also monitored and documented. Thus, the insights from project officers and their development and documentation processes contributed to the case studies.

The importance of participant observation was also evident in the strategy of ensuring, as far as possible, that the project officers were present at Project Steering Committee meetings; and also that there were always at least two staff from the central unit at those meetings. This enabled one member, usually the Project Manager, to play a more active role in the meeting by engaging with the issues and the debate, whilst the other was a participant observer and scribe, producing the minutes of the meetings as an official record of the development processes.

In summary, participant observation and documentation was used to gather data during:

- Establishment meetings/preliminary negotiations;
- Project Steering Committee meetings;
- Enterprise/Plant visits;
- Curriculum development processes;
- Training classes.

Interviewing was the second major data gathering technique. All interviews were conducted by Peter Waterhouse and with only a very few exceptions these were audio tape recorded and fully transcribed. In all approximately 50 interviews were conducted ranging in length from 10 to 60 minutes producing over 250 pages of transcript data. This transcript data has been used throughout the case studies, following the convention of placing transcript excerpts in italics for ease of identification.

The intention with the interviewing strategy was to gain multiple points of view from the various stakeholders involved with the pilot programs. This involved purposeful rather than random sampling[2]. This means that the individuals interviewed were not selected at random, but deliberately sought out, with a particular purpose in mind.

The sampling strategy used for the project involved Maximum Variation Sampling[3] which aims at capturing and describing the central themes or principal outcomes that cut across a great number of cases. The strategy was emergent rather than fixed from the beginning. Informants were sought out to provide the information required at that time in the inquiry. After talking with management representatives for instance, a shop steward or shop floor worker would be sought for a different perspective. Or participants from the program might be sought to "balance" the trainer's perspective. It was not possible to interview all the potential informants, decisions had to be made on the move, based on the overall emergent design, as well as such factors as the logistics and time constraints. On some occasions informants were re-visited when a new issue, question or theme emerged.

There was no set questionnaire or interview schedule. In most cases it was necessary to explain the reason for the interview and how the information would be used, the exceptions being interviews with project officers or others closely involved with the steering committees and therefore quite familiar with the purpose of the research. Reference was usually made to the Commonwealth funding for the NALLCU project and the need to evaluate and report on the work in progress. Permission was sought to tape record the interview. In each case it was explained that the interviews would be transcribed and that extracts from the transcripts would be used in the case study. At the same time those being interviewed were told they would be given the opportunity to modify or withdraw comments if they so desired.

Informants were invariably cooperative and helpful, no one declined to be interviewed or tape recorded. However time was sometimes quite limited and interviews had to be structured to fit the circumstances.

Typically the opening question would be an invitation for the informant to comment on the pilot project; "What can you tell me about the project here at [Ford, Nissan, Toyota ...]?" or "Well, how do you think its going - from your perspective [as shop steward, participant, manager ...]?"

Follow up questions were shaped as the conversation unfolded. There were however recurring themes which were investigated: questions about the curriculum development processes - "How did that work?" "How did you feel about that?" "Was that a problem, from your point of view?"

There were questions about training, in particular whether there was any apparent difference between what was being done in the pilot program and any previous training within the enterprise. There were questions about the impact or effect of the project - "Do you think this project will make any difference to what really happens on the shop floor?" "Will there be any long term benefit?" "Will it make any difference after the Project Team leave?"

There were questions about the Project Officers; sometimes quite open -"What comment can you make about the teachers who have been involved in the program?" At other times more specific - "Can you identify the criteria, or the qualities that you'd be looking for in people to do this sort of work?"

Each interview was unique. Each informant was approached for the particular perspective s/he could offer. Most of the interviews were one-to-one and face to face; occasionally where circumstances suited there were group and telephone interviews.

In summary, interviews were conducted with the following groups of stakeholders:

* Participants in pilot programs
* Enterprise management representatives:
  - production
  - training
* Union representatives:
  - shop stewards
  - Work Change Adviser, state office
  - Education Officer, state office
* NALLCU Staff:
  - curriculum officers
  - Curriculum Planning Officer

The project officers' research, teaching and journal notes; draft curriculum materials; and samples of program participants' work, were also included in the analysis.

Content analysis and review of documentation: The third data gathering strategy was based upon content analysis and review of documentation. This came from multiple sources; industry publications such as the Automotive Industry Reports helped to provide an overview of the industry and the pressures for international competition.

Publications from the companies gave an insight into their policies and practices; unpublished shop floor and administrative documents revealed the logistics and processes operating in the workplaces. Union papers and policies were considered, as were various reports and papers produced by NALLCU, including minutes of meetings.

In summary, review of documentation embraced the following:

- Industry reports
- Government policies and papers
- Enterprise publications
- Union policies and papers
- Professional and academic literature: education and training
- Project materials:
  - unpublished workplace documentation
  - samples of curriculum material
  - student work
  - process documents (from project teams)
- NALLCU documentation:
  - minutes of meetings
  - reports to WELL
  - confidential reports to companies
- Field notes:
  - "Snapshots from the Field"
- Project officer's notes - from the minute books

2. Reflection and Data Analysis

The second phase of the case study process came in discussion and analysis of the emerging data. As noted earlier this process was part of the on-going data collection. Through telephone contact, Project Steering Committee Meetings, NALLCU team meetings and informal discussions, staff and the workplace stakeholders considered the significance of the work in progress.

Such discussions became part of the on-going processes of data analysis throughout the project. Sharing of anecdotes and critical incidents; discussion over reports and draft curriculum materials; group brainstorming sessions around the electronic white-board; lunch and morning coffee arguments over interpretations of events; these processes were not a discrete phase of the project but concurrent with the processes of data collection and drafting of the report[4].

Having said this, it should be noted that most of the interview data was not available for analysis until late December 1993 and January 1994. The timelines framing the various pilot projects meant that in most cases the teaching or trialing of the pilot was continuing up until Christmas. In some cases this was carried over into the New Year. It was felt that interviews prior to the pilot programs being at least implemented would be premature. Consequently most of the interviews were conducted during the second half of December 1993.

Peter Waterhouse was responsible for the transcription of interviews and much of the transcript-data analysis which was done during January to March. This analysis proceeded inductively. That is to say the process was one of sifting through the raw data with all of its specific examples to find patterns, statements, or issues which could be categorised or linked in some way. Margin notes, coloured text highlighters and a great deal of paper shuffling were strategies used to cluster or categorise parts of the transcripts. The approach was to work on the transcripts from each pilot project independently; looking at the similarities and differences in how the different informants had described their particular program.

However whilst working on the individual case studies there developed an increasing awareness of patterns and similarities which reached across the pilot programs. These connections pointed to broader issues, principles, or generalisations which might be framed as a result of the project. These issues are taken up in Chapters 12-14 of this report.

3. Collaborative Writing and Negotiated Outcomes

Just as the analysis of data was not divorced from the processes of data collection, neither was the writing of the research separated from the processes of reflection and analysis.

Each of the case studies evolved as collaborative documents. The principle writers for the case studies were the project teams; Peter Waterhouse as co-researcher and scribe; and Robin Sefton as manager of NALLCU and editor. As curriculum planning officer Rosemary Deakin was also involved, commenting upon the drafts and offering critical insights. Rosemary was also the main writer of the HEC Case Study.

Once drafts of the individual case studies were in reasonable shape they were returned to the industry stakeholders who had been involved in each pilot program and who had provided information for the case study.

In some cases substantial revision was required at this stage as the stakeholders each responded to the authors' (and each others') perceptions and interpretations of events. It also became evident that the researcher's attempt to explain their purpose and method had not been entirely successful. Some stakeholders did not fully understand the nature of the research. They were surprised to see themselves or others quoted verbatim; they expected informants' comments to be carefully crafted or edited by the researcher. Other stakeholders expressed pleasure in seeing the comments and individual "voices" being expressed. At this stage some comments were revised by the informants themselves, some were withdrawn and others added.

Each case study eventually passed through repeated cycles of drafting and revision to emerge as a consensual document which the industry stakeholders were prepared to make public[5]. This process also involved the case studies being formally ratified by the various Project Steering Committees which were established at each site. Part of the challenge for the writers was to meet the needs of each of the diverse stakeholders. Once the individual case studies were cleared for publication they were combined to produce a draft report. This draft, with all of the case studies, details about the methodology, educational rationale, analysis of results, their implications and recommendations, was then returned once again to the stakeholders for amendment and ratification. This final report is the result of these processes of negotiation.

Endnotes

1. See Waterhouse, 1994, "Industry Based Adult Educators in a Quality Circle" for more details on this aspect of NALLCU's work.

2. Caulley (1992), in "The Basic Characteristics of PostPositivist Interpretive Inquiry", unpublished M.Ed Class Notes, Graduate School of Education, La Trobe University, Melbourne, explains purposeful sampling as follows:

   > "Purposeful sampling is, then, very different from conventional random sampling. It is based on informational, not statistical, considerations. Its purpose is to maximise information, not to facilitate generalisation. Its procedures are strikingly different, too, and depend on the particular ebb and flow of information as the study is carried out rather than on a priori considerations. Finally, the criterion invoked to determine when to stop sampling is informational redundancy, not statistical confidence level" (p.14).

   He adds that:

   > "Random probability samples cannot accomplish what in-depth purposeful samples accomplish, and vice versa. Piaget contributed a major breakthrough to our understanding of how children think by observing his own two children at length and in great depth. Freud established the field of psychoanalysis based on fewer than ten client cases. Bandler and Grindler (1975) founded neurolinguistic programming (NPL) by studying three renowned and highly effective therapists: ... Peters and Waterman (1982) formulated their widely followed eight principles for organisational excellence by studying 62 companies, a very small sample of the thousands of companies one might study.
   >
   > *The validity, meaningfulness, and insights generated from postpositivist inquiry have more to do with the information richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size.*" (p.16)

3. Ibid. p.5.

4. Caulley (Ibid.) points out that; "While it is recommended holding back attempts at full-fledged, ongoing analysis, some analysis must take place during data collection. Without it, the data collection has no direction." He cites Tesch (1990) who notes; "Analysis is not the last phase in the research

BEST COPY AVAILABLE

process; it is concurrent with data collection or cyclic". Thus the processes of making sense of the data were not left to the end, but commenced when the data gathering commenced.

5. This methodology involved what Caulley refers to as negotiated outcomes:

> "the phrase 'negotiated outcomes' is meant to imply that both the facts and the interpretations that will ultimately find their way into the research report must be subjected to scrutiny by respondents who earlier acted as sources for that information,". (Caulley, 1992, p.23)

Chapter 7
Foundry Elective:
A Case Study of Integrated Training at Holden's Engine Company (HEC)

I think the benefits I see are long term, ... We are trying to change [the] *culture at the moment and what we're trying to say to these people out here is "You have got the brains, let's utilise them". There are a lot of things we can do with our employees, we've just got to harness their ability and we've also got to give them the authority to do it. That's one of the* [key] *things.*

Nick Papadam
Foundry Superintendent

7.1 The Context at Holden's Engine Company

Holden's Engine Company (HEC) is one of Australia's largest exporters of manufactured goods producing engines and vehicle components for both domestic and overseas markets.

The Company was formed in 1986 and is a fully owned subsidiary of General Motors Corporation. Since its creation HEC has performed well and continues to achieve production targets and greater efficiency. The Company has remained profitable throughout the recession. Organisational structures in the company have been progressively refined since 1986. However work organisation has not altered greatly and the Company does not have a formalised structure of work teams operating.

The Company and the AFMEU (Vehicle Division) are fully supportive of the Training Reform Agenda and agree on the principle of continuous improvement in production efficiency and quality as the outcomes of training. In the past HEC has provided informal, non-accredited process training for non-trades employees in response to production needs and innovations in different plants.

Vehicle Industry Certificate (VIC) Training at HEC

Since the VIC was introduced in 1992, it has been (and still is) offered to employees on the basis that attendance would be voluntary, outside of work hours and unpaid. As there is no provision for recognition of prior learning (RPL) for knowledge units, employees are expected to complete 200 classroom hours. VIC classes of 4 hours duration are available prior to afternoon shift or after day shift finishes. In the case of night shift, 2 X 2 hour classes are offered two mornings a week after night shift finishes.

Under the industrial agreement covering existing non-trade employees, the on-the-job skills training was designed to facilitate reclassification and wage progression from N10

- N22 on the HEC wage scale, while the off-the-job knowledge training was to provide wage progression from N23 - N31.

HEC chose to establish joint campus arrangements with the Box Hill College of TAFE for the delivery of the off-the-job (knowledge and elective units) component of the VIC. It was intended that College teaching staff would deliver the core units of the VIC using the modularised learning packages that had been developed for Australian Committee for Training Curriculum (ACTRAC) by the Outer Eastern College of TAFE in collaboration with a number of other TAFE Colleges and industry working parties.

The elective streams at HEC were developed by College consultants in collaboration with Company personnel who have expertise in different streams (e.g. assembly). Two of the College consultants were literacy and curriculum specialists subsequently employed by NALLCU to develop the Foundry Project (Jane Sims) and the Nissan Warehouse Project (Ann Eller).

Box Hill College of TAFE Industry Service Unit, assisted by the Company's Training Coordinator, conducted an on-the-job skills audit and developed skills matrices for each major stream of activity. In addition the College trained Company Assessors for the on-the-job skills training and assessment.

When the off-the-job training commenced at HEC in March 1992, some 230 employees from different plants, including the Foundry, enrolled in the program. These included many employees from a non-English speaking background (NESB) who had been with the Company for up to 25 years. Some employees held positions of leadership and responsibility in the Company.

Learning Needs Interviews were conducted by Rosemary Deakin, the Literacy Coordinator from Box Hill College of TAFE. During these interviews, many employees expressed confidence and pride in their on-the-job competence but some anxiety about their writing and reading skills and/or lack of formal education. However almost all employees interviewed demonstrated adequate ability to communicate orally in English, albeit broken or non-standard English.

Many of these employees saw the VIC, not simply as a means of gaining a qualification and wage increase, but more particularly as an opportunity to gain formal recognition of the skills and knowledge they had developed over the years. Many expressed hope that they would gain assistance with communication skills, in particular writing, not so much for their work, but for personal achievement. For this, they were willing to take the "risk" of attending class.

In her Interim Report (to HEC, the AFMEU, Box Hill College and VIC teaching staff) in March 1992, Rosemary Deakin identified a number of critical learner needs and stressed the importance of these needs being *"addressed with sensitivity and integrity by teachers to ensure maximum participation and success in the program"*.

Trainees were placed in mixed ability, multi-ethnic class groupings according to preferences expressed in interviews, in particular,

- to learn in a particular group with work mates or mentors who would support and assist them in their learning; and/or fit in with transport and personal commitments.

The criteria for class groupings accorded with the AFMEU (HEC Branch) concern that all employees have access to training and should not be streamed, or discriminated against, on the basis of ethnicity or language/literacy levels.

Each group was characterised by a range of English language and literacy skills and included employees from several different ethnic backgrounds. These multi-ethnic groups reflected actual workplace groupings and the communication networks. It was intended to use these networks and draw on and extend first language proficiency as a vehicle to supporting and improving participation in training and the acquisition of English language as well as to encourage respect for cultural differences.

In the early stages of implementation, complaints about the delivery and program material led to a number of employees dropping out from some classes.

At the request of HEC, teachers who were sensitive to the cultural differences, able to facilitate the literacy and language development and to meet learning needs of employees, were selected by the College to provide more appropriate VIC training. Considerable effort was made by these teachers, with the encouragement of Douglas Virgin, Senior Industrial Officer and Training Coordinator, to bring training closer to the reality of the workplace. Learning experiences and source material relevant to both employees and the Company was introduced.

It was the direct experience of these teachers (Deakin, Sims, Gates, Eller), and the results that they achieved, that lead NALLCU to advocate an integrated model.

Industrial Context

When the Foundry Elective project was due to start, in February 1993, some members of the vehicle union branch at HEC were not supportive of the VIC because of a number of unresolved industrial issues. In order for the project to proceed at HEC, the union drew an industrial fence around it. In other words, the project could operate as a trial until an enterprise agreement covering training was negotiated. As explained by the union Education Officer:

> *The State Office of the union embraced the integrated model as a pilot. Rosemary put together a package saying what she was going to do and the union's leadership took a decision that that was going to happen. There was an acceptance by the majority of shop stewards at HEC that if there was an industrial fence around it they didn't care if people wanted to do it voluntarily.*

Thus the first project for an integrated model to be attempted by NALLCU commenced with the support of the State Office of the AFMEU although it was not part of a wider Enterprise Agreement on training at HEC.

7.2 Proposed Project for an Integrated Model

Prior to this project being proposed, HEC had appointed RMIT as consultants to develop the Foundry Elective Unit of the VIC in December 1992.

Subsequently the HEC Senior Industrial Officer proposed a meeting between the Foundry management and NALLCU, on 17 February 1993, regarding the possibility of an action research project in the Foundry. At this time RMIT had just started work on developing the Foundry Elective Unit.

At that meeting it was indicated by the Foundry Production and Quality Control Managers that the VIC Foundry Elective, as outlined in the syllabus, would be of very little relevance to the daily operation of the Foundry. John Marks, the Foundry Production Manager, was concerned that the Elective would need to reflect the actual production system at HEC rather than a theoretical description of foundry processes, if it was to provide meaningful training to line operators. Since the actual production system is very complex, such training might be accessible by only a very small percentage of employees because of language and other difficulties. What then would be the training options of those employees who might not be able complete their VIC, or those who might see no point in even attempting it? As John Marks later stated:

> *... what we have is a technical process. We certainly wanted the people to learn some of the technical aspects of our manufacturing operations. But then the real concern was, were we developing something that was going to be way beyond the comprehension of our people? This has been really to the credit of NALLCU and this is when I think NALLCU very much stepped in.*

Developing the accredited syllabus to provide a training program that would be relevant, credible and accessible to all Foundry employees was acknowledged to be very important. It was agreed to ask RMIT to halt their work on developing an elective of limited application, and invite them to participate jointly with Foundry personnel and NALLCU curriculum officers in developing an integrated model for the Foundry Elective Unit.

A meeting of the HEC Senior Industrial Officer with RMIT, to discuss the proposal, was followed by a joint Company, RMIT, NALLCU meeting on 1 March 1993 and agreement was reached to work together on the proposed project.

A project brief was subsequently drafted, a tripartite project steering committee was established, and project staff were appointed.

Project Steering Committee

The first meeting of the Project Steering Committee was held on 29 March 1993 and it met on a regular basis thereafter, except during the trial of the unit when the time of the Project Team was limited.

Membership of the Committee included:

John Marks - Foundry Production Manager (Chair)
Ron Griffiths - Manager, Quality Control
Douglas Virgin - Senior Industrial Officer & Training Coordinator, HEC
Jack Smith - Senior AFMEU (Vehicle Division) Shop Steward, Foundry
David Smith - Work Change Adviser, AFMEU (Vehicle Division)
Walter Gore - Head of Department, RMIT
Robin Sefton - Manager, NALLCU
Rosemary Deakin - Curriculum Planning Officer, NALLCU
Peter Waterhouse - Curriculum Officer, NALLCU

In Attendance:

Jane Sims - Project Officer, NALLCU
Terry Klass - Project Officer, RMIT
Maggie Gundert - NALLCU Coordinator, Independent Learning Centre (ILC) at HEC

Project Brief

The Project Brief outlined the intentions of the Project, how it was to operate and the various roles and responsibilities, including that of the Project Steering Committee, the make-up of the Project Team and the proposed timelines. The Aim of the Project was:

> To design, develop, trial and evaluate the VIC Foundry Elective customised to meet the training needs at Holden's Engine Company Foundry using a collaborative approach and an integrated model. [Project Brief]

Project Team

Jane Sims - Curriculum Officer, NALLCU
Terry Klass - Teacher, RMIT
Maggie Gundert - NALLCU Coordinator, HEC

Maggie Gundert, an experienced ESL teacher, was employed as a NALLCU Coordinator in the ILC and on the project for several months. Maggie subsequently undertook another project for Adult Migrant Education Services.

Jane Sims is a Special Education/Literacy consultant. Jane came to the project with considerable experience teaching in TAFE (Apprenticeship, Associate Diploma, VCE and Labour Market programs) as well as teaching the VIC at HEC where she developed and taught the curriculum for the clerical elective.

Terry Klass brought to the project his considerable experience in industry consultancy teaching Metallurgy and Foundry Studies to apprentices and Higher Education students at RMIT.

Richard Cooney, an experienced teacher and NALLCU Curriculum Officer, was brought in for a few weeks to assist the Project Team by researching and writing the Fettling Unit.

As manager of the project and in her role of Curriculum Planning Officer for NALLCU, Rosemary Deakin was closely involved in the project: in shaping the curriculum content; in developing learning experiences; and in teaching. Rosemary is a Special Education/Literacy consultant with teaching and curriculum development experience in both TAFE/Higher Education as well as labour market and industry training (VIC) programs.

7.3 The Foundry at HEC

The Workplace

HEC is one of the few engine plants in the world with a fully integrated foundry on site. The Foundry employs a relatively small workforce of 246 operators who come from 36 different nations. In 1993 it shipped approximately 27,500 tons of Iron Alloy Castings, including engine blocks and other components, to local and export markets. Over sixty different components are produced, some in relatively short runs, with precise specifications, and within tight schedules.

As a major Australian exporter, HEC Foundry is determined to expand its market share and lift its international reputation for quality standards. The company officially achieved International Standards Certification IS0 9001 in 1993.

A shift in customer destinations over the last few years, with the major market share now in Asia (not Europe) has created new opportunities and new challenges. Korea is now the largest customer. Other significant initiatives are on the drawing board for the Asian region.

The organisational structure of the foundry is based on fairly traditional hierarchical lines. Although the concept of self-managing teams and work groups has not been established in the company, there is considerable evidence in the foundry of a team spirit which encourages cooperative behaviours within and between groups of workers.

The demands for diversity and flexibility of production, to achieve schedules and customer specialisation in casting design, composition and performance, are increasing the pressure for new skill formation, that is multi-skilling and multi-functional comptence, as well as organisational and cultural change in the Foundry.

Profile of Employees

The Foundry workforce of 246 operators is characterised by strong ethnic identity, predominatly Greek, Turkish and Vietnamese. Approximately 18% of employees are from an English speaking background (ESB). Many employees in the 40-60 year old category have been with the company since their migration to Australia.

A high proportion of foundry employees report having some difficulty with Standard English, especially reading and writing. However, this should not be taken as a reflection of their other skills, abilities and potential, nor of the strategies they use to cope with their work.

Although jobs in the foundry have traditionally been confined to designated areas, employees are starting to move around more. Some, encouraged by their supervisors, are acquiring additional skills beyond their designated areas through in-house training, formal study at TAFE colleges and recent VIC training options.

Work in the foundry is particularly arduous, often repetitive and in many instances very complex. However the level of precision, judgement and responsibility involved in what appear to be simple tasks may not be immediately apparent to the casual observer.

In the past employees have acquired skill and knowledge through on-the-job experience and informal instruction from peers, leading hands and supervisors. Such learning is often subtle and intuitive, and frequently draws upon a range of skills and abilities which have their origins elsewhere; for example, in employment and training experience gained overseas and through life experience.

Many employees have had to show initiative, solve problems, be adaptable and flexible; often in the face of extreme adversity and/or profound social change (e.g. migration, war, poverty etc.). That capacity for adaptability and conceptual and analytical thinking is not confined to their personal lives and is often used quite unconsciously in the workplace.

It was this untapped reservoir of skills, abilities, attributes and capacities which the Project was keen to harness, as explained by Rosemary Deakin:

> *We believed that a key variable for successful learning in the foundry elective would be the development of strategic competence, whereby participants learned to combine and use strategically the full range of their skill, abilities and attributes. This strategic competence would use and enhance, although not depend on, English language and literacy.*

Workplace Communication

Oral communication between shop floor employees, supervisors, and leading hands relies substantially on a network of ethnic languages and dialects, and a plant specific "lingua franca". This hybrid language is continually evolving and is a pragmatic combination of English, languages other than English, Foundry specific terms, colloquialisms and Australian slang enriched with gestures and signs. The utterances are often short and very direct - essential elements in a very noisy environment where time is precious. The brevity of what appear to be simple exchanges, belies the complexity and diversity of ideas being communicated.

In relation to reading and writing communication, the nature of individual jobs determines their communication requirements and may include:

* interpreting documentation written in a technical (engineering) genre, for example, Process Intent Sheets, Routing Manuals, Test Procedures;

* reading and recording data on forms or on computer (often with tabulated abbreviations and graphics) for example, schedules, tally sheets, check lists, tags, order forms, dockets;

* reading general plant notices written in a formal genre; eg. regarding pay, safety, overtime etc.;

* interpreting statistical data; eg. performance graphs;

* reading "white board" communiques; eg. quality or scrap information, hand written in key words/phrases and often in conjunction with displays of castings/cores.

* writing memos in simple note form.

Of the sixty employees who attended interviews in July 93 to find out about the proposed Foundry Elective and to indicate their needs and aspirations, many employees from a non-English speaking background (NESB) had considerable difficulty understanding abstract language. However they were able to deal more adequately with the technical genre of documents from their own work area such as a Mould Line Schedule or a Preheater Charge Sheet which they saw on a regular basis.

They had acquired the particular language concepts orally through reinforcement by explanations in their own language and work experience. Being able to understand and say the words preceded recognising them in print.

It was agreed from the outset of the project that authentic workplace communication which embraced the ethnic languages and dialects, the plant specific "lingua franca" and the various types and levels of technical genre, should be included in the learning program, as these are essential elements of the workplace culture.

The Participants

At the time of this Project, only 11 employees had completed the full 144 hours of VIC core knowledge units. It was not feasible to run an elective for 11 employees spread between day, afternoon and night shift. Employees who had not attempted the core units were therefore, invited to join the classes, enabling two Foundry Elective groups to be formed.

All interested employees able to attend were offered places, 31 chose to do the elective and 11 chose core classes. A number of NESB night shift employees, although interested in the program, found the class times (outside work hours) a problem because of family commitments e.g. caring for or taking children to school, sharing transport/family car, etc. A number of day shift employees wanted to join the elective but found that classes clashed with overtime work.

All groups were deliberately formed as multi-ethnic, multi-ability to reflect the natural mix of the workplace groups. It was understood that cooperative learning and innovative strategies would need to be developed so that all employees could participate at least at a minimum level.

A key strategy (trialed by Gates, Deakin, Sims, Eller and Roberts in earlier VIC classes) was to encourage NESB's to use their first language where appropriate as a reference framework for clarifying new concepts and relating them to past and present experience and knowledge. This process was facilitated by group members who were able to communicate well in English and other languages, and by the teacher guiding and modelling the strategy. It was therefore not essential that all employees spoke or wrote at a particular level of English, however effective learning strategies, peer support and respect for cultural differences and group cohesion in the classroom and plant were essential.

Both pilot groups displayed a diverse range of skills, abilities, educational background and work/life experiences. With respect to literacy and language, each group, although quite different in its composition, exhibited characteristics commonly described in such global terms as:

- ESB employees with relatively low levels of literacy;
- NESB employees with high oracy but low levels of English literacy;
- NESB employees with relatively low oracy but a basic level of written English;
- NESB employees with high oracy but low levels of literacy in both English and their native tongue;
- several employees with specific learning difficulties;
- many employees who had not completed their formal schooling (in some cases primary);
- several ESB and NESB employees with a very good level of spoken and written English;

Group 1 included 12 night shift employees who attended two mornings a week from 7.30 until 9.30 a.m., after completing a night shift. This group had a higher proportion of younger employees including NESB. Although they were quite proactive as learners, some had not experienced success at school and initially showed strong avoidance behaviour at the "thought" of assignments and assessment. Once the anxieties were overcome their enthusiasm in both guided and independent research exceeded expectations.

Their assignment work reflected their potential to flourish under the support and guidance of several supervisors and other HEC staff (engineering, laboratory, production managers, etc.). Their literacy and language development showed marked improvement as their research assignments evolved during the drafting and conferencing sessions with Jane Sims.

This group was very lively, enthusiastic and almost volatile at times, in between being exhausted to the point of occasionally nodding off for short periods of time in the case of a few individuals.

Of the 12 who started

- eight successfully completed the program;
- two did not complete their research assignments (deferred)
- two very able employees successfully completed 3 units but decided not to continue as they did not expect to stay at HEC;

Group 2 included 19 employees (including 16 NESB) from day and afternoon shift. The Foundry Superintendent had to reorganise work schedules so that the 2 afternoon shift employees worked 4 hours, attended class for 4 hours and then returned to work for the remaining 4 hours. The day shift completed a full shift before class which was held between 4 and 8 p.m.

This group was characterised by a much wider spread of ethnic backgrounds and life experiences. The majority were born overseas and over half of these had disrupted or minimal education in their own country and had little opportunity to acquire much English literacy since. Three of the ESB had low levels of literacy and three of the participants had specific learning difficulties.

Despite less well developed English language and literacy skills, this group made considerable progress relying on oral communication. They were exceptionally supportive of each other. The assignment afforded the opportunity to spend more time on the craft of writing to which they responded most enthusiastically.

The results demonstrated the progress possible when learners write about things which they have learnt through direct experience and which are important to them. Their English language and literacy development showed improvement, although not to the level of some Group 1 participants.

Attempting the research projects with this group within such a tight time frame was ambitious however the participants were so interested in their investigations and wanted to formalise them in presentable reports which they could keep.

This group initially separated into ethnic cliques, because they did not know one another. This reserve gave way to genuine friendship and respect for the cultural and other differences, and the cliques disappeared. They became very cohesive as a group, took turns at leadership during plant visits and established support networks and friendships which endured beyond the end of the program.

Of the 19 who started:

- fifteen successfully completed the program;
- one left the Company;
- one was absent, in the final weeks, due to overtime work and decided to defer;
- two attended several sessons then withdrew due to leave and overtime.

Group 3/4

Of the remaining eleven employees, ten joined VIC Core classes run by Jane Sims or Rosemary Deakin. They were included in many of the learning experiences, for example, practical activities in the plants and at RMIT and used some of the same resource material.

7.4 Curriculum Development Process

Development of Curriculum

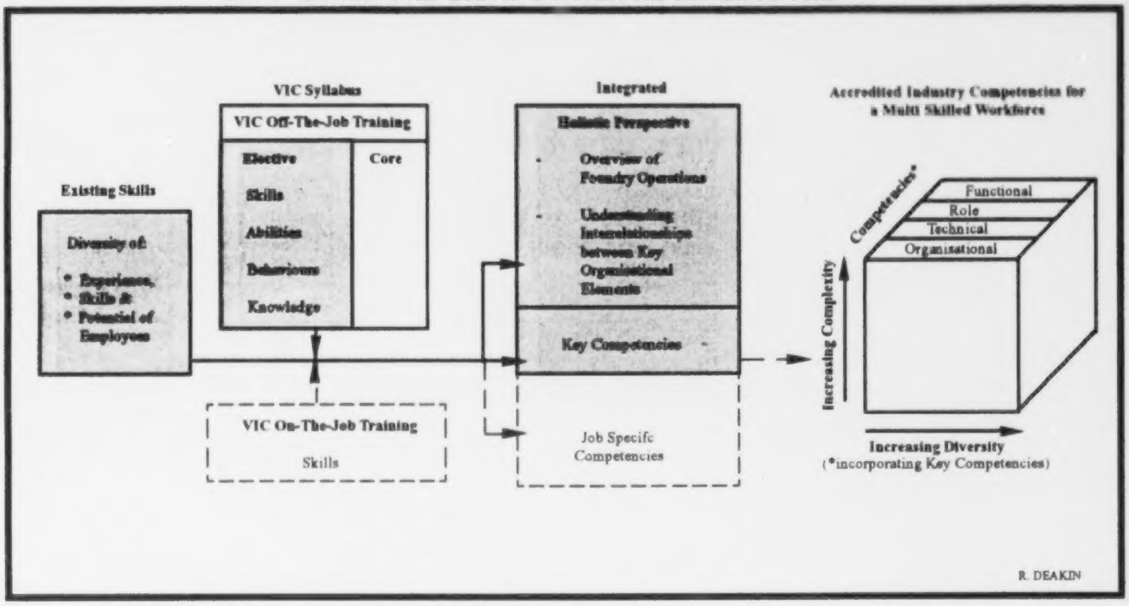
When the Project Team commenced the project, no curriculum existed for the elective other than the syllabus outline. Nor was there any material available from other programs which could be modified and used. The team was faced with a considerable challenge. The task was to facilitate a process of detailed consultation and collaboration to research and develop:

- a curriculum framework relevant to the foundry;
- enterprise specific resources; and,
- an implementation strategy able to stimulate employee involvement and co-operative learning which would contribute to the development of a learning culture in the workplace.

Although the Foundry Elective is designated as a separate entity of 60 hours duration; Rosemary Deakin was concerned that the conceptual framework of the integrated model should allow for the integration of the 144 hours of Core Units and eventually, the on-the-job skills, to provide a holistic and meaningful training strategy. The perspective therefore needed to be forward looking, beyond the limits of the VIC, to accommodate the changing roles, functions and responsibilities of employees and to facilitate the development of a multi-skilled, multi-functional workforce.

Figure 4 illustrates the transformation from segregated on-the-job and off-the-job training to an integrated program. The project officers had to wrestle with the problems of designing and developing the elective as the significant element of a bigger picture and as the vehicle for developing key (generic) competencies. At the same time, they were constrained by the syllabus time allocation of 60 hours.

FIG 4 LOCATING THE ELECTIVE WITHIN THE BIGGER PICTURE


VIC Syllabus
VIC Off-The-Job Training
Elective
Skills
Abilities
Behaviours
Knowledge
Core
Existing Skills
Diversity of:
• Experience,
• Skills &
• Potential of Employees
VIC On-The-Job Training
Skills
Integrated
Holistic Perspective
- Overview of Foundry Operations
- Understanding Interrelationships between Key Organisational Elements
Key Competencies
Job Specifc Competencies
Accredited Industry Competencies for a Multi Skilled Workforce
Competencies*
Functional
Role
Technical
Organisational
Increasing Complexity
Increasing Diversity
(*incorporating Key Competencies)
R. DEAKIN

The following extracts show the progression from the somewhat textbook like approach of basic ideas in the original VIC syllabus.

VIC Foundry Elective Syllabus

E 3.1 Terminology and Processes (16 Hours)
1. Basic Terms
2. Steps and Processes of Production Grey /Nodular Iron
3. Types and uses of Tools

E 3.2 Safety (6 Hours)
1. Types of Equipment
2. Purpose and Application
3. Safety Procedures

E 3.3 Furnaces (8 Hours)
1. Types of Furnaces
2. Operation of Furnaces

E 3.5 Moulds and Cores (8 Hours)
1. Parts of Mould
2. Types of Purpose Cores
3. Process of Producing Moulds
4. Process of Producing Cores

E 3.6 Fettling
1. Causes of Variations in Castings
2. Process of Monitoring and Rectifying Problems
3. Inspection of Casting for Defects

A discussion paper prepared by the Foundry Production Manager illustrates the shift to encompass production variables, the viability of production and key elements of organisation. Some of the elements, for instance, statistical control and routing, stated or implied John Marks's outline had been addressed generally in the core units of the VIC. However the inclusion of them in his elective proposal demonstrates that they would have real meaning if integrated into the elective content.

Production Manager's Draft Outline

1. **Knowledge of Processes**
   - (a) Core Room (sand mixing, core manufacturing)
   - (b) Mould Line (mould manufacturing, materials handling)
   - (c) Melting (grey iron, nodular iron)
   - (d) Fettling
2. **Knowledge of Key Variables - Effect on Process Viability**
   - (a) Raw Materials
   - (b) Machinery Operation
   - (c) Tooling Maintenance(ROS, Design, casting, knock off, shrink bob)
   - (d) People
3. **Knowledge of Quality Systems**
   - (a) Routing
   - (b) Process Intent Sheets (work instructions, etc)
   - (c) RecordSheets
   - (d) Procedures
   - (e) Statistical Process Control
4. **Knowledge of Casting Cost Structure**
   - (a) Labour - direct & indirect
   - (b) Raw Materials
   - (c) Process supplies
   - (d) Maintenance
5. **Casting Defects - Recognition & Causes**

The conceptual framework of the foundry elective which ultimately developed was based on the ideas put forward by John Marks, earlier work by Rosemary Deakin and the ideas which emerged from the collaborative process specifically employed in the project.

Using a Collaborative Approach

Central to the development of the elective was a process of collaboration and consultation throughout the four plants which comprise the foundry at HEC. The principles of this process are discussed in Chapter 3 and illustrated in Figure 2 (p 27). At HEC this process ensured that the curriculum was based on the actual needs of the workplace and that it involved all stakeholders in determining what would be learnt. It positioned learning about the workplace in the workplace, as part of the process of developing a working-learning culture. Part of the curriculum challenge was to retain the technical accuracy and reality of HEC practices yet be accessible by shop floor employees.

While the project team provided an important mix of interdisciplinary skills (in

Metallurgy, Literacy and Language and Curriculum Development) foundry staff and employees provide the essential expertise and wealth of resources from the workplace. In commenting on the value of a multi-disciplinary team, Terry Klass commented:

> *I think that was a great success. I think that was probably the best thing about it, there were people from different backgrounds coming together to develop the program, for those particular people. I thought that worked very well. ... I think it was necessary that those people, like Jane and Rosemary and myself came together and developed that. It's given that program a lot more strength in that it's better suited to those ... people.*

It was agreed that the data collection process would follow the logical stages of production starting with Casting Design Specifications and ending with Fettling and Shipping of the finished products. The team divided the initial work into two areas. Jane Sims and Terry Klass followed each process along the production line, interviewing operators and staff. Jane would transcribe the information which Terry checked for technical accuracy. As the team proceeded in their task of collaboration, sometimes the perceptions different people had of a particular process, procedure, test, variable or work practice differed from the available documentation. These discrepancies were often a difference between actual practice and official records arising from pragmatic shop floor solutions. Occasionally the Project Team got bogged down with conflicting detail. Clarifying and resolving such anomolies took diplomacy and time but was very important both for accuracy sake and for continuous improvement.

As the content, technical terms and related language was highlighted and recorded by Jane, technical language was passed to Maggie Gundert to use in preparing a glossary. This was a very time consuming task, which required simplifying explanations of concepts, providing examples of associated language, and space for the learner to record notes and translation (first language). Maggie went through a similar process of extensive consultation with Terry, plant supervisors, managers and technical advisers checking and correcting the content of the glossary.

Updating Information

Workplace change was a regular occurrence during every phase of the project indicating that curriculum source material must be updated all the time by classroom teachers/facilitators/trainers, if it is to be relevant to the workplace. For example, after the material for the Core Room was researched drafted and checked it was sent for typing. By chance two weeks later, the team discovered that a new resin had been trialed and introduced. The typing had to be reviewed! This incident pointed to the fact that not only should the resource material be responsive to change but the curriculum framework needed a built in strategy to review the relevance of resources and activities. This occurrence was welcomed by the team because it raised the question of how to record information which is relevant at the time but subject to unexpected change and continuous improvement. It also raised the question of how to ensure that collaboration is wide enough, to ensure 'one is on the mailing list', when changes occur.

Access to Information

The project team had unlimited access to staff and information demonstrating the committment of HEC Foundry to developing an authentic program. At times, however, it was difficult to talk to staff during work hours due to the pressure of production. In those cases, they always offered their own time when the shift finished for which the project officers were very grateful. This also highlighted the importance of the project officers being flexible and fitting in with the demands of production.

This need for flexibility and cooperation was apparent throughout the project, as for instance, during the period of preparation for International Standards Assessment for IS0 9001 and during the visit to the plant by the President of GM(USA). The pressure of production was constant, especially around Easter when there were the competing demands of customers wanting orders before the plant shut down, combined with employee absences. This was particularly exhausting for the remaining HEC staff who had to work extended shifts. Also, during the visit from the President of the parent company, production staff had to down tools to clean and paint the entire plant. There was an atmosphere of nervous anxiety throughout the plant due to speculation about intentions of the parent company regarding the future of the Fisherman's Bend operations.

While these events distracted and held up the work of the Project Team, they were important experiences in the life of the plant and gave valuable insight into the pressures which operate in a multi-national enterprise - realities which frequently do not reach traditional training rooms. The IS0 9001 assessment was a timely experience as it underscored the absolute necessity for companies to achieve international recognition for Quality Standards. During the preparation for ISO Assessment the project team found that Foundry documentation was being updated and refined (continuously improved) faster than they could keep up.

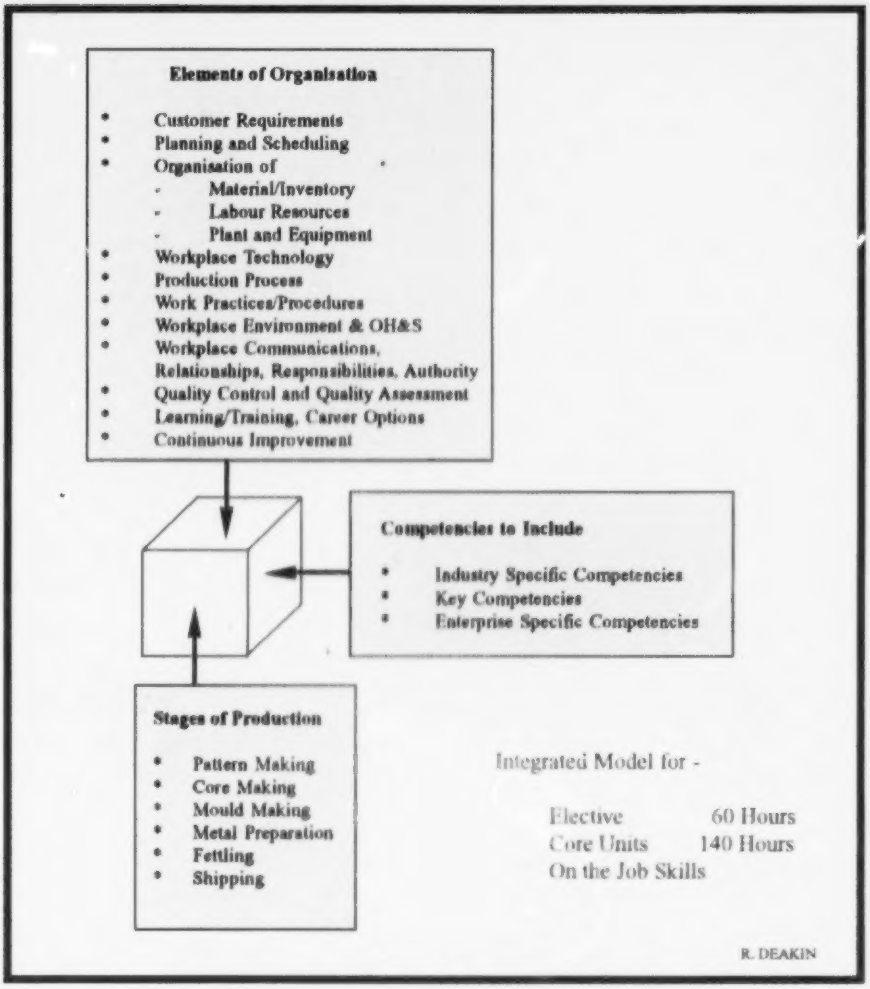
The Project Team sometimes had difficulty accessing information because they did not know what to ask for. For example, some weeks passed before they discovered that each production line had a detailed (and documented) management flow chart indicating key documents, and quality control check points and tests. This illustrates that large and complex organisations have systems which are not immediately apparent. Such systems require both intuitive and analytical approaches to sourcing them.

More important than simply having access to staff and information were the relationships and commitment which developed as the project proceeded. One of the most significant and rewarding features of the project remains the extent to which Holden staff (Production Manager, Supervisors, Engineering and Laboratory) went out of their way to provide assistance, information, constructive advice, samples and documents. This occurred not only during the initial data collecting phase but more particularly during the implementation stage. Participants were equally enthusiatic in their efforts to bring items of interest to the classroom, which came to resemble a learning laboratory of samples, documents and display.

Developing a Conceptual Framework

The key concepts to be addressed in the curriculum were eventually incorporated into the model illustrated in Figure 5. The Framework illustrates the overview of stages of production arranged in logical sequence and the interrelated organisational elements which impinge repeatedly on each stage. The competencies including Key Competencies (Mayer) are developed in learning activities related to the productive stages and organisational elements.

FIG 5 CONCEPTUAL FRAMEWORK FOR FOUNDRY ELECTIVE


Elements of Organisation
• Customer Requirements
• Planning and Scheduling
• Organisation of
- Material/Inventory
- Labour Resources
- Plant and Equipment
• Workplace Technology
• Production Process
• Work Practices/Procedures
• Workplace Environment & OH&S
• Workplace Communications, Relationships, Responsibilities, Authority
• Quality Control and Quality Assessment
• Learning/Training, Career Options
• Continuous Improvement
Competencies to Include
• Industry Specific Competencies
• Key Competencies
• Enterprise Specific Competencies
Stages of Production
• Pattern Making
• Core Making
• Mould Making
• Metal Preparation
• Fettling
• Shipping
Integrated Model for -
Elective 60 Hours
Core Units 140 Hours
On the Job Skills
R. DEAKIN

BEST COPY AVAILABLE

7.5 Program Content

The program content is outlined on pages 83 to 90. The following should be noted:

1. Key competencies and literacy, language and numeracy skills development are listed separately only to illustrate their presence in the learning program. They were integral components of the learning program and, as such, are written into the actual curriculum (either implicitly or explicitly) as competencies which underpin experiential learning. In some units particular competencies, e.g. planning and organising activities, were not applicable to all members of the group. The teacher, supervisors and individual class members assumed responsibility for planning and organising the learning activities for those sessions. The Matrix in Table 2 illustrates the fact that key competencies are continuously developed and should not be treated as one-off tasks. An individual will move to different levels of competency depending on the complexity of the task. It is not the intention of the matrix to show level of complexity.

Table 2 INTEGRATION OF KEY COMPETENCIES INTO FOUNDRY ELECTIVE

Units Key Competencies	Unit 1 Overview of Foundry	Unit 2 Intro to Metallurgy	Unit 3 Pattern Making	Unit 4 Core Making	Unit 5 Mould Making	Unit 6 Melt	Unit 7 Fettling Salvage/ Quality Assurance	Unit 8 Continuous Improvement	Unit 9 Presentation Assessment
Collecting, Analysing and Organising Information	✓	✓	✓	✓	✓	✓	✓	✓	✓
Communicating Ideas and Information	✓	✓	✓	✓	✓	✓	✓	✓	✓
Planning and Organising Activities		*	*	*	*	*	*		✓
Working with others and with teams	✓	✓	✓	✓	✓	✓	✓	✓	✓
Using Mathematical Ideas and techniques	✓	✓	✓	✓	✓	✓	✓	✓	✓
Solving Problems			✓	✓	✓	✓	✓	✓	*
Using Technologies		✓	✓	✓	✓	✓	✓		*

* in individual cases

2. The literacy, language and numeracy skill development is included to illustrate the complexity of language/numeracy concepts being dealt with in the context of workplace learning.

3. Table 3 demonstrates how the units of the elective match with the original VIC syllabus and shows how some elements of topics were revisited in each unit.

TABLE 3 HEC FOUNDRY ELECTIVE: TRAINING MATRIX

VIC Foundry Elective	Unit 1 Overview of Foundry	Unit 2 Intro to Metallurgy	Unit 3 Pattern Making	Unit 4 Core Making	Unit 5 Mould Making	Unit 6 Melt	Unit 7 Fettling Salvage/ Quality Assurance	Unit 8 Continuous Improvement	Unit 9 Presentation Assessment
E3.1 Terminology and Processes (16 Hours)									
i **Basic Terms**	✓	✓	✓	✓	✓	✓	✓		*
ii Steps & Process of Production Grey/ Nodular Iron	✓	✓	✓	✓	✓	✓	✓	✓	*
iii Types use Tools			✓	✓	✓	✓	✓		
E3.2 Safety (6 Hours)									
i Types of Equipment			✓	✓	✓	✓	✓		
ii Purpose & Application			✓	✓	✓	✓	✓	✓	*
iii Safety Procedures			✓	✓	✓	✓	✓		
E3.3 Furnaces (8 Hours)									
i Types of Furnaces						✓			*
ii Operation of Furnaces		✓				✓		✓	*
E3.4 Moulds & Cores (8 Hours)									
i Parts of Mould			✓	✓	✓	✓			*
ii Types of Purpose Cores			✓	✓	✓	✓			*
iii Process of Producing Moulds			✓	✓	✓		✓	✓	*
iv Process of Producing Cores			✓	✓			✓	✓	*
E3.5 Mould Tooling and Pairing (8 Hours)									
i Grating & Feeding Systems of Mould			✓		✓	✓	✓	✓	*
ii Method & Safe Procedure Pouring Mould		✓			✓	✓			*
E3.6 Fettling (6 Hours)									
i Purpose Fettling							✓	✓	*
ii Techniques & Tools							✓		*
E3.7 Casting Quality & Inspection (8 Hours)									
i Causes of variations in Castings		✓	✓	✓	✓	✓	✓	✓	*
ii Process of Monitoring & Rectifying Problems	✓	✓	✓	✓	✓	✓	✓	✓	*
iv Inspection of Casting for Defects		✓	✓	✓	✓	✓	✓	✓	*

* In Individual Cases

BEST COPY AVAILABLE

Unit 1: Introduction to the Foundry

Outcomes:

- an overview of foundry operations
- analysis of key issues of workplace change and their impact on foundry operation, organisational systems/practices and foundry markets

Content:

- Foundry Operations:
  - production methods
  - new technology
  - ferrous castings components and specifications produced
  - quality control/quality assurance methods/practice
- Foundry Work Organisation and Practices:
  - work practices including job rotation and multi-skilling
  - employee participation in decision making, quality control/assurance and continuous improvement (including elimination of waste)
  - organisational practices
  - timelines for production including MRP2 (Material Requirements Planning) and Just-in-Time production
- Foundry Markets:
  - customer destinations of export market
  - customer specifications
  - global competition (including ISO standards)

Integration of Key Competencies (Mayer):

- working in small/large groups
- expressing ideas from personal experience
- researching information from Company documents/source material/personnel
- analysing, classifying, organising data into meaningful framework
- using mathematics to interpret & produce statistical information
- identifying variables in processes; developing alternative strategies
- identifying key issues/developing an overview of foundry operation

Literacy, English Language & Numeracy Skill Development:

- language concepts (foundry operations, quality control/assurance, work organisation, continuous improvement, production performance, scheduling, export markets, global competition)
- drawing flow charts (export timelines, scheduling, production to shipping)
- reading & drawing graphs (line, column graphs for OK Castings, pie charts)
- reading HEC Publications/source material (production statistics, markets)
- using percentages, decimals, averaging

Unit 2: Introduction to Metallurgy

Outcomes:

- an understanding of the general principles and process of alloying iron - nodular and grey
- investigation of the customer requirements - properties, characteristics, composition, and dimensional specifications

Content:

- elements and processes used in making nodular and grey cast iron
- HEC processes/policies/practice of testing for quality control, assurance, research and development, and problem solving
- properties and characteristics of iron alloys (e.g. effects of heat, changed state, hardness, tensile strength, machinability, microstructure, magnetic properties)
- relationship between composition of alloy, mechanical properties and use.

Practical Activities:

- HEC Main Laboratory, Plant 11: interview with principal scientist and technical officers. Demonstration of testing procedure.
- Block Inspection Meeting, Plant 15: meet with superintendent/engineers regarding quality assurance/defects.

Integration of Key Competencies:

- working in groups
- expressing ideas from new experiences
- investigating information (HEC Laboratory, documents: customer specifications, testing procedures, charge recipes, spectrographic analysis)
- analysing, classifying and organising information (process of alloying iron)
- interpreting graphic information & using mathematics to calculate % tolerances
- identifying variations in process
- using technology (carry out/observe tests: crystals in lead, hardness, tensile strength, microstructure of nodular & grey iron)

Literacy, English Language & Numeracy Skill Development:

- acquiring language concepts (metallurgy, nodular/grey iron, elements (metal/non-metal), process variations, customer specifications, properties of metals (including machinability)
- reading (gauges: temperature, hardness; graphs: tensile strength)
- calculating (tolerances (decimals), percentage differences, percentage scrap)
- drawing diagrams (crystals, illustrations)
- writing notes (Lab. visit , Activity Sheet)

Unit 3: Pattern Making

Outcomes:

- an understanding of the design, maintenance and repair of patterns and core boxes in relation to producing quality castings
- an understanding of defects caused by defective, damaged or worn patterns

Content:

- relationship between customer specifications, patterns, core boxes and finished castings
- inspection of patterns for features (tapers) and areas of wear
- observing the new technology (profile plotter) used for accurate analysis of pattern profile (areas of wear, dimensional accuracy)
- cost of patterns (capital outlay and damage repair)

Practical Activities:

- Pattern Shop: inspection of patterns and interview with staff regarding maintenance and care of patterns
- Mould Line Pattern Holding Area: inspection of patterns on Mould Line

Integration of Key Competencies:

- working in small/large groups
- communicating ideas, new concepts, new experiences
- inspecting patterns (customer specifications, repair, maintenance, modification for try-outs)
- interviewing maintenance staff (maintenance & care of patterns, documentation for inspection, tags for repair)

Literacy, English Language & Numeracy Skill Development:

- acquiring language concepts (customer specifications, pattern design, modification, maintenance, repair, pattern materials, handling and planning)
- reading (repair tags, inspection chart, pattern number, schedule, date code, customer specification/dimensions)
- writing notes for Activity Sheet

Unit 4: Core Making

Outcomes:

- an understanding of the materials, processes, procedures & equipment used in making cores
- an understanding of quality standards, variations in materials or process and consequences

Content:

- raw materials requirements (quality standards, laboratory testing, tolerance of variations and consequences for sand/resins)
- scheduling and process of making cores (monitoring process, measuring variations, adjusting processes, consequences)
- inspection of finished cores (quality, scrap report on scrap defects)
- safety requirements (materials handling, production process)
- waste/continuous improvement

Practical Activities:

- Sand Laboratory: visit and interview with metallurgist
- Core Line: inspection of core line with supervisor/leading hand

Integration of Key Competencies:

- working in small/large groups
- interviewing, communicating, expressing ideas, concepts and experiences
- researching information, analysing, classifying & organising data
- using mathematics to interpret control charts and graphs
- investigating current problems and solutions (defective castings- defective cores, incorrect placement of cores, omission of chaplet, problems of dips, curing,etc)
- using technology (materials/process control tests e.g. sand fineness, scratch test, dog bones, dip density, tensile strength) & relate to graphs & statistics

Literacy, English Language & Numeracy Skill Development:

- acquiring language concepts (materials: resins, sand, dips, chaplets, glue; processes: core making; schedules; core characteristics; core defects)
- reading (charts; class notes; graphs: dip temperature, sand fineness, humidity; gauges: Baume for density; scrap report: core defects; schedule; notice
- writing notes (observations, interview with metallurgist)
- Mathematical/scientific concepts (temperature, density, humidity, dimensions & tolerance)

Unit 5: Mould Making

Outcomes:

* an understanding of the raw materials, sand recycling process, procedures and equipment used in making moulds
* an understanding of quality standards variation in mould sand, process and the consequences

Content:

* sand recycling system, quality standards, tolerance of variations & consequences for mould quality, carrying out selected tests
* scheduling & process of making moulds: monitoring process, measuring variation, identifying consequences & adjusting process
* inspecting finished moulds, gating system, assembling manifold cores, filters etc. in moulds
* inspecting castings for mould defects, cf scrap report
* safety requirements (materials handling, production process)
* making & pouring a mould
* waste elimination/continuous improvement/future technology/work change

Practical Activities:

* Sand Laboratory: compactability test for recycled sand
* Mould Line, Plant 14: demonstration with supervisor - core setting, mould inspection etc.
* Metallurgist: interview & test demonstration sand recycle system
* RMIT: making & pouring (aluminium) a mould with core, practicum at RMIT

Integration of Key Competencies

* working in small/large groups, communicating ideas, experiences
* researching information, analysing, classifying, organising data (schedules, process intent sheets, cope & drag machine, core setter)
* using mathematics/scientific concepts (pressure, ratio, tolerances, gauge reading, charts for compactability)
* identifying variables, problem solving (casting defects), key issues for improving sand systems

Literacy, English Language & Numeracy Skill Development

* acquiring language concepts (sand durocarb, bentonite carbon, composition green sand, mould making, sand recycling, compactability, active clay, schedules, mould characteristics, defects)
* reading (schedules, pattern identification, notes, scrap report, process intent sheets, charts for cope/drag, core setter, compactability)
* writing (notes of interview with supervisor & metallurgist, class notes)
* mathematical concepts (pressure, ratio, tolerances, gauge reading)

BEST COPY AVAILABLE

Unit 6: Melt Area - Making & Pouring Cast Iron Alloys

Outcomes:

- an understanding of recycling of scrap metal, process of melting, alloying, pouring metal
- an understanding of quality standards, variation in composition of metal & process, testing procedures & consequences
- an understanding of operation of pre-heater, furnace, master control room, carrier & ladle system, equipment

Content:

- scrap recycling system
- scheduling & process of preparing metal, monitoring process, measuring variation (chemical analysis) temperature, hardness & chill, identifying consequences & adjusting process
- inspecting finished castings, gating system, shrink bobs, cross sections of engine blocks for quality
- identifying possible causes of defects, compare with scrap report
- comparing variations in microstructure for different alloys
- safety requirements, operation of equipment, noise, radiation, materials handling & production process
- waste elimination

Practical Activities

- Melt Deck: investigate scrap recycle, alloy station, testing samples (temperature, carbon content, spectro analysis, chill wedge) slag off furnace
- Master Control Room: visit with metallurgist (furnace and control room)

Integration of Key Competencies:

- working in groups, communicating ideas, concepts
- researching information, analysing, classifying, organising data including schedules, documentation charts, instructions for: preheater, furnace, carrier, alloy station, pouring area
- identifying variables (temperature, composition), problem solving (casting defects & causes - short pours, cold shut, gas bubbles, sand pouring basin)
- using technology (pyrometer, tundish, pouring samples)

Literacy, English Language & Numeracy Skill Development:

- acquiring language concepts (scrap, alloys, preheater to pouring, composition of nodular & grey iron, inoculation, process control, cold shut, shut pour, gas holes, induction furnace)
- reading (preheater recipe, alloys inoculant, test class notes, scrap report)
- mathematical concepts (temperature, ratios, decimals, percentages)

Unit 7: Fettling, Quality Assurance & Salvage

Outcomes:

- an understanding of fettling process, inspection of castings for quality assurance & methods of salvage/scrap recycling

Content:

- scheduling for fettling to provide JIT for machine shop & shipping (external)
- process/procedures in fettling, including inspection of castings for testing, re-work, scrap
- quality assurance system of inspection, analysis of quality, reports to all sections on performance (supervisors, managers)
- procedures for re-work of raw casting & salvage for machined/assembled castings, elimination of waste, continuous improvement
- requirements for shipping, moisture tests, etc.
- recycling of scrap & swarf

Practical Activities:

- Plant 15/12: interview with engineer & supervisor & inspection of casting, salvage & re-work, safety, classifying defects & tracing causes

Integration of Key Competencies:

- working in groups, communicating, interviewing, researching information
- analysing, classifying & organising data (schedules, documentation, instructions for operators, re-work/salvage, scrap reports)
- using mathematical concepts (tables, graphs)
- problem solving (elimination of waste, etc.)
- identifying variables (shot blasting, grinding, spray painting, defects in castings)
- using technology (moisture probe for shipping pallet, kero testing)

Literacy, English Language & Numeracy Skill Development:

- acquisition of language concept (shot blasting, grinding, painting, quality assurance, salvage, re-work, recycling, scheduling, shipping (JIT), quality control on re-work)
- reading (schedules, process intent sheets, class notes, scrap reports)
- writing (notes for class, interview, tally sheets)
- mathematical/scientific concepts (force - sand blasting, gravity, tolerance in dimensions, pressure - gauge reading, temperature - hot welds, tally sheets)

Unit 8: Continuous Improvement

Outcomes:

- a broad perspective of learning culture in workplace as being integral to continuous improvement
- review of the major foundry operations in terms of continuous improvement as systemic process

Content:

- link between continuous learning/reflection & continuous improvement - role of a learning culture
- key issues to be addressed in making the workplace responsive to learning, multi - skilling & constructive change
- review the key processes of production & factors causing variation & how systemic improvement can be affected
- role of try -outs - research & development
- process of achieving standards recognition e.g. ISO 9001
- review performance data on HEC foundry & current customer base

Integration of Key Competencies:

- working in groups, communicating, analysing, reflecting
- researching (try-out process)
- identifying key issues (continuous improvement, learning, workplace, change, innovation)

Literacy, English Language & Numeracy Skill Development

- acquiring language concepts (try-outs, process of continuous improvement, research & development, cultural shift, workplace change, customer requirements - plant & international, HEC suggestion plan)
- mathematical concepts (interpreting graphs)

Unit 9: Presentations/Assessment

Practical Study)
)
Report Writing) (for details see assessment section p 95)
)
Oral Presentation)

Resource Material

A range of resource material was compiled to support the program and learning activities:

- flow charts of production processes;
- descriptions and illustrations of key concepts;
- documents relating to the process or procedures, for example, Process Intent Sheets, Charts;
- samples of alloys, geological specimens (mining industry), test specimens, castings;
- photos of the production line (melt, mould and core areas) taken by Lenny Colocca (trainer) on behalf of project; photos and visual material from CRA; videos of ABC series **Out of the Fiery Furnace** - CRA;
- learner activity sheets/ photos by Sims and Deakin;
- a glossary of terms. Maggie Gundert trialed the glossary with several foundry employees and a participant from the pilot project who attended the ILC for the purposes of improving their language and literacy skills.

All resource material was intended to be used as a vehicle for developing skills (conceptualising, analysing, problem solving). The Foundry flow charts provided a format for illustrating the connection, relationships and interdependence of key elements of organisation, quality control and customer specifications. Documents were not simplified or reduced to plain English. Examples on the next three pages illustrate the genre of workplace documents. They were used with photographs as source material.

QUALITY IS NUMBER ONE

FOUNDRY	PROCESS INTENT	GROUP CORING
	PART NAME & NO.	

PROCESS INTENT

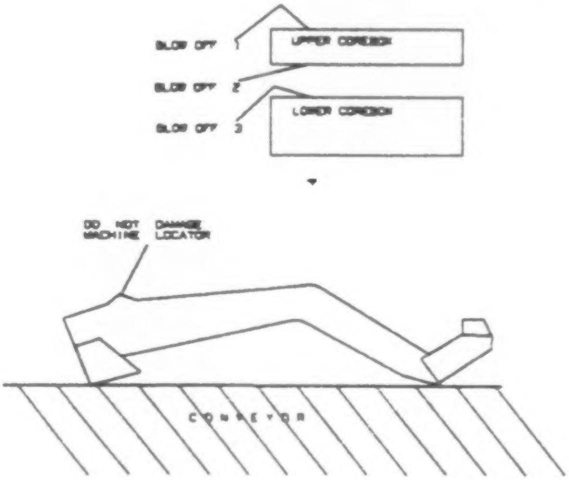
A: BLOW OFF TOP OF UPPER COREBOX & COREBOX CAVITIES
B: KNOCK OFF BLOW BUSH STEEPLES (FLUSH TO BELOW CORE PRINT
C: INSPECT COLOUR OF CORE & COMPARE COLOUR TO SAMPLE DOG BONE
(NOTE: CORES TO BE GREEN NOT BROWN)
D: REMOVE CORES FROM LIFTING ARMS AND PLACE PRINT SIDE DOWN ON CONVEYOR
(NOTE: PLACE TO CONVEYOR IN SETS)

CONSEQUENCES IF NOT ACHIEVED

A: LOOSE BURNT SAND ON CORE SURFACES
B: MISPLACED CORE DURING SETTING
C: WEAK CORE SURFACE
D: DAMAGED MACHINE SHOP LOCATOR

HOW TO CHECK VISUAL

DIAGRAM


BLOW OFF 1
UPPER COREBOX
BLOW OFF 2
LOWER COREBOX
BLOW OFF 3
DO NOT DAMAGE MACHINE LOCATOR
CONVEYOR

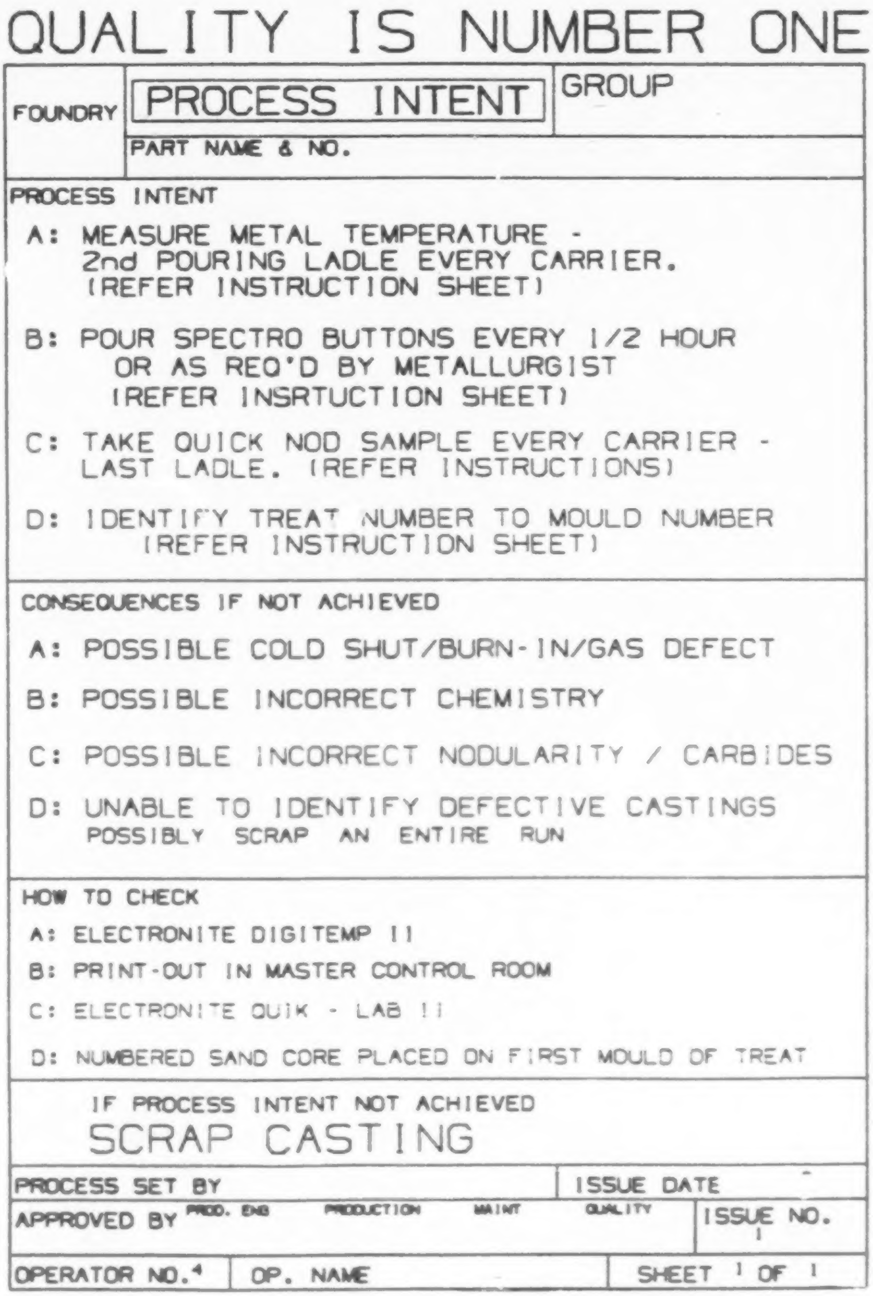
IF PROCESS INTENT NOT ACHIEVED

SCRAP CASTING

PROCESS SET BY		ISSUE DATE
APPROVED BY PROD. ENG PRODUCTION MAINT QUALITY		ISSUE NO. 1
OPERATOR NO. 1	OP. NAME	SHEET 2 OF

© Holden's Engine Company

Foundry Resource Sheet: Core Room



QUALITY IS NUMBER ONE

FOUNDRY	PROCESS INTENT	GROUP
	PART NAME & NO.	

PROCESS INTENT

A: MEASURE METAL TEMPERATURE -
2nd POURING LADLE EVERY CARRIER.
(REFER INSTRUCTION SHEET)

B: POUR SPECTRO BUTTONS EVERY 1/2 HOUR
OR AS REQ'D BY METALLURGIST
(REFER INSRTUCTION SHEET)

C: TAKE QUICK NOD SAMPLE EVERY CARRIER -
LAST LADLE. (REFER INSTRUCTIONS)

D: IDENTIFY TREAT NUMBER TO MOULD NUMBER
(REFER INSTRUCTION SHEET)

CONSEQUENCES IF NOT ACHIEVED

A: POSSIBLE COLD SHUT/BURN-IN/GAS DEFECT

B: POSSIBLE INCORRECT CHEMISTRY

C: POSSIBLE INCORRECT NODULARITY / CARBIDES

D: UNABLE TO IDENTIFY DEFECTIVE CASTINGS
POSSIBLY SCRAP AN ENTIRE RUN

HOW TO CHECK

A: ELECTRONITE DIGITEMP II

B: PRINT-OUT IN MASTER CONTROL ROOM

C: ELECTRONITE QUIK - LAB II

D: NUMBERED SAND CORE PLACED ON FIRST MOULD OF TREAT

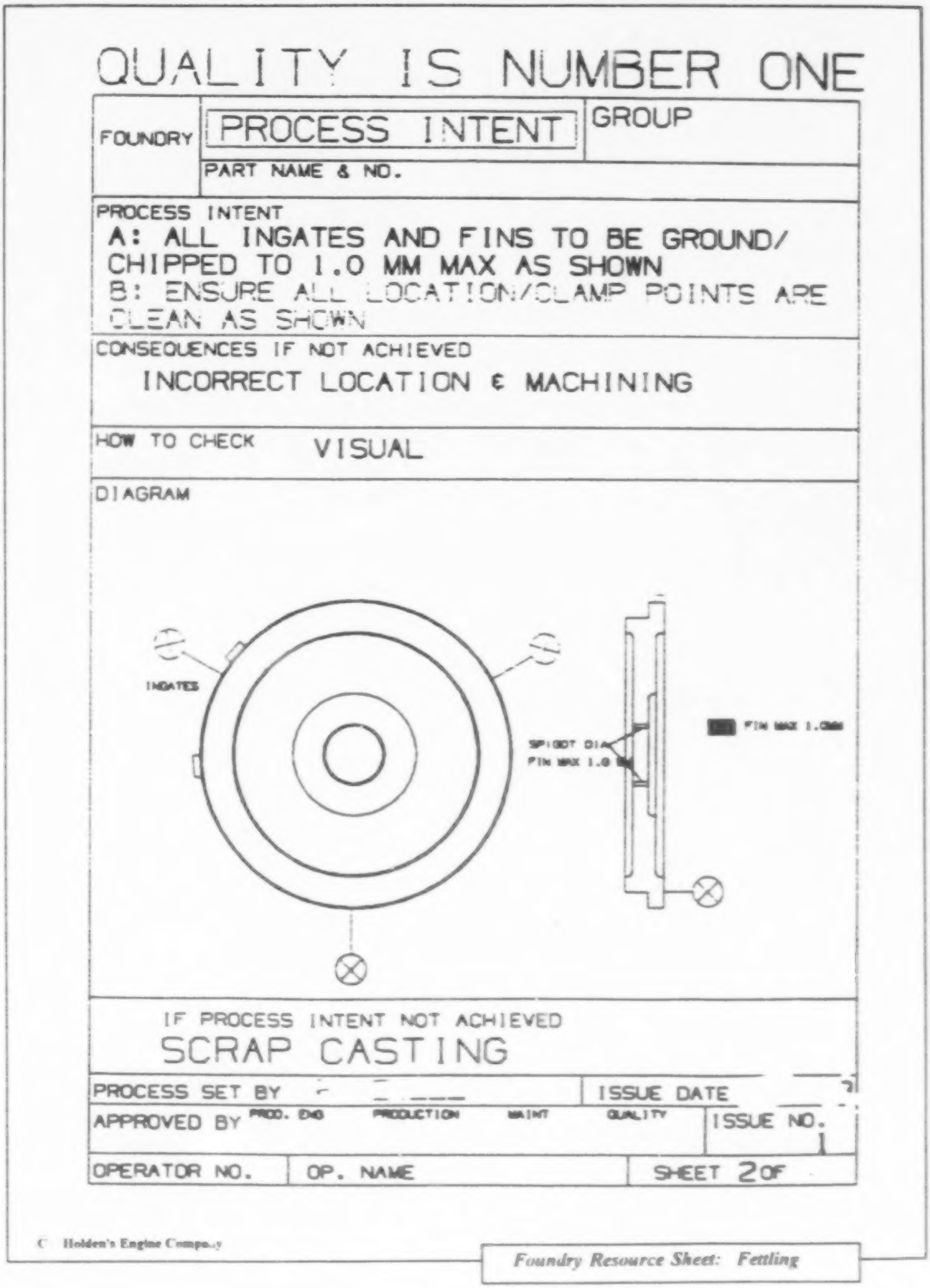
IF PROCESS INTENT NOT ACHIEVED

SCRAP CASTING

PROCESS SET BY				ISSUE DATE	
APPROVED BY	PROD. ENG	PRODUCTION	MAINT	QUALITY	ISSUE NO. 1
OPERATOR NO. 4	OP. NAME			SHEET 1 OF 1	

© Holden's Engine Company

Foundry Resource Sheet: Melt Area



QUALITY IS NUMBER ONE

FOUNDRY	PROCESS INTENT	GROUP
	PART NAME & NO.	

PROCESS INTENT
A: ALL INGATES AND FINS TO BE GROUND/ CHIPPED TO 1.0 MM MAX AS SHOWN
B: ENSURE ALL LOCATION/CLAMP POINTS ARE CLEAN AS SHOWN

CONSEQUENCES IF NOT ACHIEVED
INCORRECT LOCATION & MACHINING

HOW TO CHECK VISUAL

DIAGRAM

INGATES
SPIGOT DIA
FIN MAX 1.0
FIN MAX 1.0MM

IF PROCESS INTENT NOT ACHIEVED
SCRAP CASTING

PROCESS SET BY				ISSUE DATE	
APPROVED BY	PROD. ENG	PRODUCTION	MAINT	QUALITY	ISSUE NO. 1
OPERATOR NO.	OP. NAME			SHEET 2 OF	

C Holden's Engine Company

Foundry Resource Sheet: Fettling

Learning Experiences

The most important part of the program was designing and implementing suitable learning experiences. Much of the resource material and conceptual framework of the elective remained in draft form up until the program was implemented. The content of each weekly session was prepared only a week in advance. This was necessary to allow the project officers to reflect on the proceeding week and fine tune either the content or the activities. It also allowed both participants and supervisors to contribute to shaping the program, thus ensuring that learning outcomes were relevant to both employees and the plant. All participants of both groups contributed by explaining processes in their own area, demonstrating the operation of equipment, and so on.

Supervisors and other HEC staff were actively involved in designing and presenting content and directing learning experiences on the shop floor for approximately two hours each week in the practical sessions. Their ideas were often very innovative and showed considerable insight into what makes learning real and meaningful. Some seemed to relish coming up with these ideas and revealed themselves as exceptional facilitators of learning. Activities included many experiences to which operators would not normally have access. Examples of the involvement of supervisors/staff include activities in the following areas:

* Pattern Shop - Design and Maintenance (John Mullane);
* Customer Specifications (Ian Marr and Bryan Bardwell);
* Quality Assurance - Supervisors Scrap Review Meeting (All Supervisors);
* Main Laboratory (David Woodroffe, Ali Fathelbab, and John Mrozowski);
* Core Room (Milan Grah and John Patten);
* Sand Laboratory (Denis Biasotto);
* Mould Line (Jimmy Anastasakis)
* Melt Deck (Denis Biasotto and Jarvis Jin)
* Fettling (John Zadunajski and George Pirotta)
* Scrap Review (Bryan Bardwell and Ian Marr)
* Scheduling (Nick Papadam and John Chow)

Not only did the supervisors make considerable preparation, for example, by preparing a special mould for a core setting demonstration on the mould line, they also followed up queries from the participants and arranged job rotations to extend work experience. This networking and developing of a somewhat different learning culture in the plant formed the basis of support by the supervisors for a later key stage - the research assignments (practical study).

Practical Study

Each research assignment was discussed initially with individual employees, by either Jane Sims or Rosemary Deakin, taking into account learner needs and aspirations. It was then negotiated with the Foundry Superintendent prior to the topic being formalised. The Superintendent provided invaluable advice, ideas and support, and the essential authority for each employee to proceed. He later commented;

... they've given me every project, everything, in fact they even went to the point of making me sign every project that the guys took on. I got to read and sign [them] *so that if there were any warts or if anyone was a bit negative ... they could come back to me.*

Jane Sims commented on this aspect of the project;

Each project was designed for individual participants and negotiated with them, the students, with their supervisors and with Nick Papadam prior to starting, ... Nick provided them with a fairly formal "gatepass", into whatever they needed to do. He ... discussed the project with them, ... signed them off, and said;"If there is any problem at all, please come and see me." ... [The students] *were thrilled, ...* [it] *gave them a wonderful lift, they just took off.*

Some of the topics which participants tackled included:

- Monitoring quality in core production;
- Testing and monitoring chill and hardness in cast iron;
- Documenting the procedure for machining and inspecting camshafts in Fettling;
- Documenting the current system of requisitioning supplies and proposed new systems;
- Reviewing some of the research and work method trials involved in commissioning the Cold Box Machine for production of cores for V8 engine exhaust manifolds;
- Monitoring variables in sand core mixes used in core production;
- Repair and maintenance of mould patterns;
- Researching different types of dips and their use on cores;
- Try-out of modifications to drag pattern for FII cylinder block;
- Effects of variations in compactibility of green mould sand;
- Documenting the procedure for fettling, inspection and quality assurance of FII camshafts;
- Investigating mould sand variables which increase the risk of gas defects.

The following pages illustrate some essential elements of the Practical Study:

- Page 97 shows the assignment contract to be signed by the Foundry Superintendent. This records the agreed study topic and gives the learner permission to visit particular plants, collect information, carry out tests, etc. It observes protocol in advising supervisors in advance and helps the learner to understand the need for protocol. It also informs and involves supervisors and relevant personnel in the learning process and provides an official network of helpers to facilitate learning;
- Page 98 details the purpose of the study and assistance available;
- Page 99 shows an example of a completed log of activities which records the work of one participant (Ray Young).

The overiding supervision, at Plant level, for each practical study was the work of Nick Papadam who made himself available to help employees and spent many hours advising and reading drafts. In addition, some supervisors spent between three and six hours with individual participants. Some assignments of particular note included those related to "Try outs"[1] (see pages 100-102) and casting problems (done with Bryan Bardwell and Ian Marr) and those on cores, dips, moulds and testing (done with John Marks, Milan Grah, Denis Biasotto, Lee Thanhi and Farid Botros).

FOUNDRY PRACTICAL STUDY

____________________ , Plant ______________ , __________ Shift,

is undertaking a practical study on

____

as part of the VIC Foundry Elective.

This will involve some or all of the following

☐ Visits to

____

☐ Collection of specific information

____

☐ Collection of samples of

____

☐ Asking specific questions of staff

____

☐ Carrying out tests/practical tasks

____

I would appreciate your assistance and cooperation with the study.

____

Foundry Superintendent

Deakin, Sims

Foundry Practical Study: Activity Sheet 1

NOTES TO ELECTIVE PARTICIPANT

PURPOSE:

- This practical study will involve research in:
  - different areas of the foundry and/or
  - different aspects of a foundry process or topic.

- It is meant to be a *learning experience* providing you with opportunities and assistance to:
  - develop research skills,
  - think about and apply what you already know,
  - gain new knowledge,
  - negotiate relationships including interviews,
  - plan and organise your research,
  - analyse information,
  - solve problems,
  - suggest improvement,
  - document information,
  - present information.

- This process will bring together many of the topics and ideas that we have been discussing each week in the Elective.

- The presentation at the end is an opportunity to share with others what you have been researching.

ASSISTANCE WITH RESEARCH:

- The contact persons listed in your study brief will be happy to assist you with your research.

  Jane and Rosemary will help you with the planning and writing up of material, charts, graphs etc. (and research/analysis/documentation) and preparation of the presentation.

Deakin, Sims

Foundry Practical Study: Activity Sheet 2

FOUNDRY PRACTICAL STUDY - LOG OF ACTIVITIES

- RAYMOND YOUNG

Date	Activity - including persons consulted	Time
9th Nov 1993	signing of study NICK PAPADAM SUPERINTENDENT	30 MIN
10th " "	Information about study MICK GRAH SUPERVISOR	1 HOUR
16th " "	Tests done in lab THANHI LEE TECHNICIAN	1 HOUR 15 MIN
16th " "	Getting information on what was done in lab. FRANK VAONVAL TECHNICIAN	1 HOUR 30 MIN
17th " "	Scrap review papers PETER PETRAKIS SUPERINTENDENT	15 MIN
23rd " "	Collecting Information/Samples RODNEY WATKINS SUPERVISOR	15 MIN
	Going over paperwork JANE SIMS TEACHER	15 MIN
23rd " "	Writing up presentation JANE SIMS "	1½ HOUR
25th " "	Going over presentation JANE SIMS "	1 HOUR
	Presenting Report / Study to class / staff NICK PAPADAM	
HOME	Homework Researching material	14 HOUR
	WRITING DRAFTS (home)	2½ HOUR
	CORRECTING DRAFTS (home)	4 HOUR
	PREPARING TALK (home)	4 HOUR
	TYPING OF REPORT (by FRIEND	1½ HOUR

Deakin, Sims

Foundry Practical Study: Activity Sheet 3

BEST COPY AVAILABLE

TOPIC **PRACTICAL STUDY**
Individual Researching a Specific Try-Out Casting

Name: ______________________________

Project: To research and document the process of preparing and testing specific *Try-Out*, including dimensional and other modifications. *(Try-out to be specified by Nick Papadam)*

Points to consider during study:

Role of Engineering Dept. -

Who raised the *Instruction Sheet for Try-Out*, including documentation?

What changes were requested for the tooling?

What changes were recommended for the casting, (refer to technical drawings and dimensional/other changes?

Role of Pattern Shop -

Details of reworking of pattern/core box eg.

materials
method
time taken
dimensional changes
documentation of plotting and testing

Role of Engineering Dept. -

Who requested the *Requisition on Sample (ROS)*?

Where was it sent?

Deakin, Sims

Foundry Practical Study: Activity Sheet 4

Role of Foundry Production Staff -

Who authorised including the *ROS* in the weekly schedule?

How was *Try-Out* labelled and monitored?

Role of Production Staff -

What happened to the *Try-Out* during the production process?

Role of Quality Assurance -

Who was responsible for checking dimensions and other changes?

Describe the checking points.

Role of HEC laboratory -

Who was responsible for carrying out tests?

What were the test results?

Final outcome of *Try-Out* -

Was the customer happy with the results?

Was the *Try-Out* put into production?

Conclusions:

What conclusions did you come to regarding the results of the *Try-Out*?

How does it compare with the previous casting?

Recommendations (if relevant):

What recommendations would you make regarding:

either the *Try-Out* or the organisation of the process

Deakin, Sims

Foundry Practical Study: Activity Sheet 5

Possible Resources:

Resources -

Charts, drawings, graphs, samples, tests, documentation, etc. relating to any aspect of *Try-Out* Casting.

Contact Persons -

Foundry Superintendent:	Nick Papadam
Engineering	Bryan Bardwell/Ian Marr
Pattern Shop	John Mullan
Master Control Room	
Metallurgist	Denis Biasotto
Laboratories,	
Plant 11	
Sand Lab	Farid Botros
Quality Assurance	Mick Cassidy
Master Scheduler	John Chow
Maintenance Dept	
Plants,	
Core Room 14	Milan Grah
Mould Line 14	Jimmy Anastasakis
Melt Area 14	Denis Biasotto
Fettling 15	John Zadunajski
Fettling 12	George Pirotta
Machining 10	

Important

If your project involves any other visits to plants and personnel, you must:

> ***check with Nick Papadam for permission and, advise Jane Sims or Rosemary Deakin of any changes to this brief.***

7.6 Language[2] Development (including Literacy and Numeracy)

An Outcome, not a Pre-requisite

The development of both first and English language of participants was targeted as an outcome of, not a pre-requisite for, successful participation in the Foundry Elective.

Participation in the program was based on a policy of open access, with learner groups reflecting the natural grouping of employees in the workplace. Pages 66-69 of this report give a detailed description of the multi-cultural, multi-lingual groups which were formed. It was obvious from the outset of the program that, given the wide range of skills, ability, experience and language proficiency of employees, successful participation in the Foundry Elective would be heavily dependant on factors other than an particular level of English.

Examples of strategies used by Jane Sims and Rosemary Deakin to achieve this are referred to throughout the case study. However, the following comments illustrate some of the key strategies, principles and perceptions which underpinned the development of language in the Elective program.

Language Acquisition

The program was designed and conducted with the development of language as an integral component, not as a parallel or separate entity.

For example, in introducing the concept of variables in the core making process, it was necessary to teach the meaning of the word *"variable - able to be varied/changed"* and extend this to *think of all things which could be varied in the process, e.g. the size of the sand grains; the viscosity of the resin"*. The focus then moved to *"What do we mean by viscosity?"* Actual resin samples and references to honey, treacle, sump oil etc. were used to illustrate the concept with key words being written on the white board, while learners checked foreign language dictionaries, debated meanings, exchanged ideas and wrote notes, in English and in other languages, on their work sheets. Spontaneous exchanges of native tongue, interspersed with English, drew on whatever contextual cues and communication strategies were available.

Learners were exposed to multiple layers and forms of language, for example:

- the various languages, genres and dialects of the workplace;
- the language of dialogue, debate, analysis and reflection;
- the language of enquiry, research, report writing and oral presentation;
- the non-verbal language of gesture, spatial and visual elements.

Language acquisition was also encouraged both actively and passively, for example, in

the setting up and labelling of classroom displays (castings, alloys, resins, test pieces, core and mould samples) and visual material (graphs, flow charts, drawings and specifications, diagrams, photos). In the workplace, much of this material goes unlabelled and/or is incorrectly or colloquially named, for example carbon was referred to by operators as the *"black stuff"* in the mould sand or the element molybdenum was called *"molly"*.

The Foundry reflects the twin elements of stability and consistency, and innovation and change. One of the tasks in designing the elective was to capture the specificity and dynamism of workplace language. Hence the importance of collaboration in drawing upon, and incorporating,

- the language experience and cultural diversity of the learners, with

- the language of workplace practice, technology, organisational systems, etc.

During the life of the program, the turnover rate of new language was surprising as raw materials and other elements were changed or new processes introduced.

These strategies enabled a much richer language environment, especially oral language, to be established in the classroom and during practical activities than is reflected in the course content outline (p.83-90) or trainees' class notes.

Developing Strategic Competence

The emphasis in this program was placed on working from learner strengths to develop what Mawer[3] calls *strategic competence*, whereby participants learned to combine and use strategically the full range of their skills, abilities, attributes and experience. This strategic competence would use and enhance, although not depend on English language and literacy.

Perceptions About Learners and Learning

Explicit in the teaching methodology were particular teacher perceptions about learning and learners, that is:

- linguistic and cultural diversity can be utilised to positive advantage;

- harnessing existing knowledge, skills, experiences and potential maximises capacity to contribute to and benefit from learning;

- learning is most effective when it is active and reflective, relevant and holistic; and

- cooperative learning in mixed ability groups, with the support of peers and mentors, accelerates learning and enhances competent performance.

Affirmation and Language Modelling

It was essential from the outset that the teachers establish an ethical basis for interaction within the group to encourage and support risk taking in learning, reflective thinking and effective communication as well as respect for cultural and other differences.

Valuing the worth and contribution of all learners was made explicit and modelled constantly by the teachers, particularly through language. For example, communication in class and out in the plant during activity sessions was a constant flow of dialogue - exchange of ideas, discussion, questions and explanations between:

- learners of the same ethnic background using a common language;

- learners of different backgrounds using their version of the "lingua franca" of the plant as well as standard English; and

- between teachers and learners, with the teachers affirming and constantly modelling (clarifying, extending, rephrasing) the utterances. During classroom sessions key words, phrases and sentences used by the learners were constantly written on the classroom white board in English as the dialogue flowed. Learners were also encouraged to write in their first language on the board to provide both rudimentary translations for others and to reinforce meaning in English.

Over time, the affirmation and language modelling by the teachers was adopted in varying degrees by learners in their interaction with each other. Learners were also able to draw upon and share the specialist language register which each had acquired through particular work experience in the plant.

Language acquisition, participation in discussion, the quality and complexity of ideas and risk taking in learning were all significantly enhanced by the integrity of this strategy. Apprehension about cultural and other differences gave way to genuine respect, social ease and group cohesion.

Focus on Strengths, Coping Strategies and Potential

The teaching strategies and learning activities used in the program did not focus on notions of deficit but rather on the strengths of individuals and of the group. The teachers were keen to identify and capitalise on:

- the skills, abilities, personal qualities and prior experience which individuals used strategically to be competent in the work place and elsewhere;

- the coping strategies individuals used to overcome what would otherwise be construed as barriers or difficulties in learning;

- the potential which could be realised with appropriate encouragement.

All three of these elements were used to advantage in the practical studies (project) and in the weekly sessions in each plant.

Prior to each weekly session Jane Sims or Rosemary Deakin would negotiate specific activities with participants in both groups from that plant. This involved them in roles of leadership, planning, instruction, preparation, demonstrations, and co-conducting a tour of that plant to point out and discuss key processes and procedures etc. These activities, conducted with the support of supervisors, were designed to tap particular strengths, including specialist language registers, and to develop individual potential.

For example, Dragan used his daily work experience to explain the mould line schedule, demonstrate the compactability of sand, demonstrate checking of specifications, pattern numbers, charts, etc. In addition, given his training overseas as a fitter and his prior knowledge of hydraulics, he was also able to explain how the pressure mechanism of the cope and drag machine works and some of the pressure problems which cause defects in moulds.

In the Melt Area, Mario drew on his extensive experience to explain and demonstrate how he cleans out and re-lines the furnace with silicon as well as the process of curing the new lining, safety procedures and furnace care and repair. The combination of demonstration and explanation with the opportunity to examine the furnace, read labels on raw materials, ask questions, etc. facilitated the understanding and naming of new concepts by other participants.

In each case, the particular learner was assuming a relatively unfamiliar role as facilitator, but in a very familiar knowledge area. Initially some were nervous, however, as group cohesion increased, these weekly activities developed a style and momentum of their own, carried very much by the interest and enthusiasm of peers. Confidence in presenting oral information in English in a more dynamic style, and the ability to engage in dialogue with the "audience" improved significantly. These experiences provided confidence boosters which had impact in the classroom, and forged new relationships and interests.

This was particularly significant when the learners negotiated their practical studies and sought assistance from each other, either for collecting samples, reading each others' draft reports, making suggestions for editing, spelling, etc. The experience of presenting information in the plant in a familiar context prepared them to some extent for presenting their reports in the more formal atmosphere of the classroom with managers, supervisors and visitors present.

Analytical Thinking and First Language

An important focus in learning, throughout the program, was on the development of analytical thinking skills (including the language of analysis) and on the use of first language as a medium for analytical thinking.

Learners were encouraged to think, write and speak in their first language, to analyse and categorise information, solve problems and to acquire and share new concepts. This encouraged them to participate at a more sophisticated level than they would otherwise have done and facilitated the acquisition of English language and literacy as well as generic skills underpinning analytical thinking.

This strategy was an essential part of the classroom dialogue, the practical activities in the plant and investigations for the practical study, providing a more secure linguistic framework for analytical thinking in English. In validating and enhancing the first language, it also affirmed positively the ethnic origins and cultural diversity of the learners.

The following list of activities shows how Thanh Lap Luu used different oral languages (Cantonese, Mandarin, Vietnamese and English) to research his practical study on "Factors Influencing Hardness In Castings":

* two hours researching the topic and speaking in English with the foundry superintendent, metallurgist and Rosemary Deakin;

* Two and a half hours researching the topic with Jarvis Jin (Metallurgist) with Jarvis speaking English and Mandarin and Lap speaking English and Cantonese;

* three and a half hours conferencing with Jane Sims, speaking and writing in English as he drafted his translation and dealt with the conventions of writing a report and making an oral presentation in English;

* considerable additional time spent speaking in Vietnamese with Van, his Leading Hand, with other class members and with Leading Hands in Fettling Plants, as well as using the "lingua franca" of Plants 14 and 11 with employees of other ethnic backgrounds as he collected casting samples and researched the heat treatment processes for SAAB flywheels and Simo manifolds.

The following samples illustrate the written transition from his action plan, initial rough notes, through to the more formal organisation of ideas and eventually a draft translation in English.

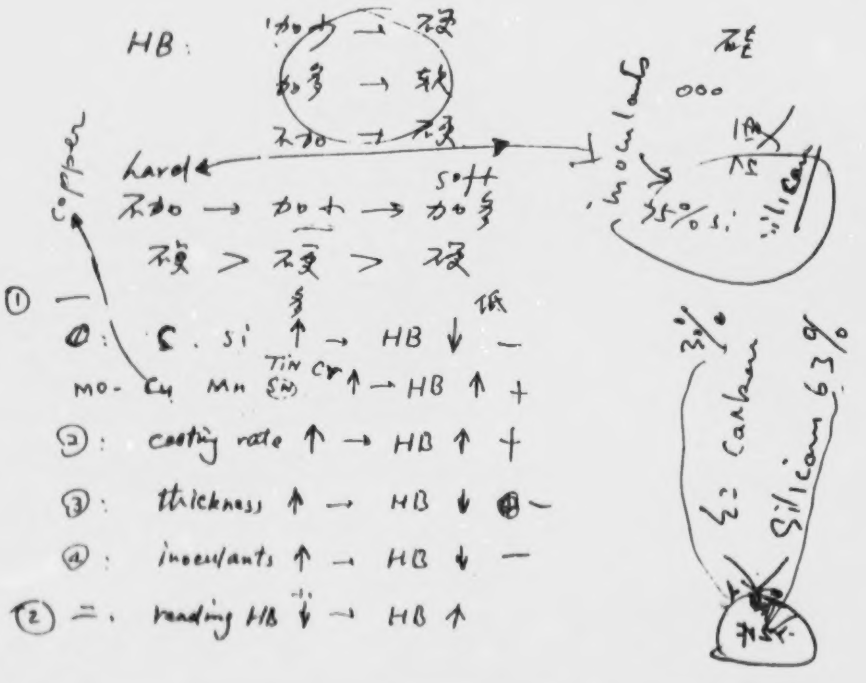
☐ Visits to Melt Area plant 14.

☐ Collection of specific information
- Chemical composition + Cooling Rates / chill
- Section thickness + use of inoculants.

☐ Collection of samples of
EG. SIMO EX MANIFOLD
SAAB FLYWHEEL.

☐ Asking specific questions of staff
Surface hardness in grey / Nodular IRON

☐ Carrying out tests/practical tasks
To Main Laboratory



HB :
加大 → 硬
加多 → 软
不加 → 硬
hard
soft
不加 → 加大 → 加多
硬 > 硬 > 硬
copper
硅
ooo
inoculant
75% Si
silicon
① —
多
低
①: C . Si ↑ → HB ↓ —
TIN
MO- Cu Mn (Sn) Cr ↑ → HB ↑ +
②: cooling rate ↑ → HB ↑ +
③: thickness ↑ → HB ↓ ⊕ —
④: inoculants ↑ → HB ↓ —
② 二. reading HB ↓ → HB ↑
3%
Si: Carbon
Silicon 63%

BEST COPY AVAILABLE

7.0 INOCulants

不加孕硬 — 加了硬度准确. → 加多不断新硬.

这是主要碳硬度问题.

C、Si 加多铁质更硬.

Mo-Cu·Mn-TiN·Cr 加多也是硬度不均匀的.

冷却快 → 是更硬.

厚度冷却快. 是更硬的.

inoculant 加多 更硬的.

表面硬 — 是更硬的.

修查 cementite 铁碳组织白色多是硬度多.

1.2 cooling rates / chill

A fast cooling rate (Thin Section) promotes chill

A slow cooling rate (thick section) stop chill from developing

1.3. Section thickness

The Specification for the section Thickness of the casting is designed to give a fast or Slow cooling rate. this in turn promotes the hardness of the iron in the castings

1.4. Use of Inoculants

Inoculants are added on the mould line and in the melt Area.

Type of iron	INOCulant used
Grey IRON	INOC 63
Nodular iron.	FOUNdrisil

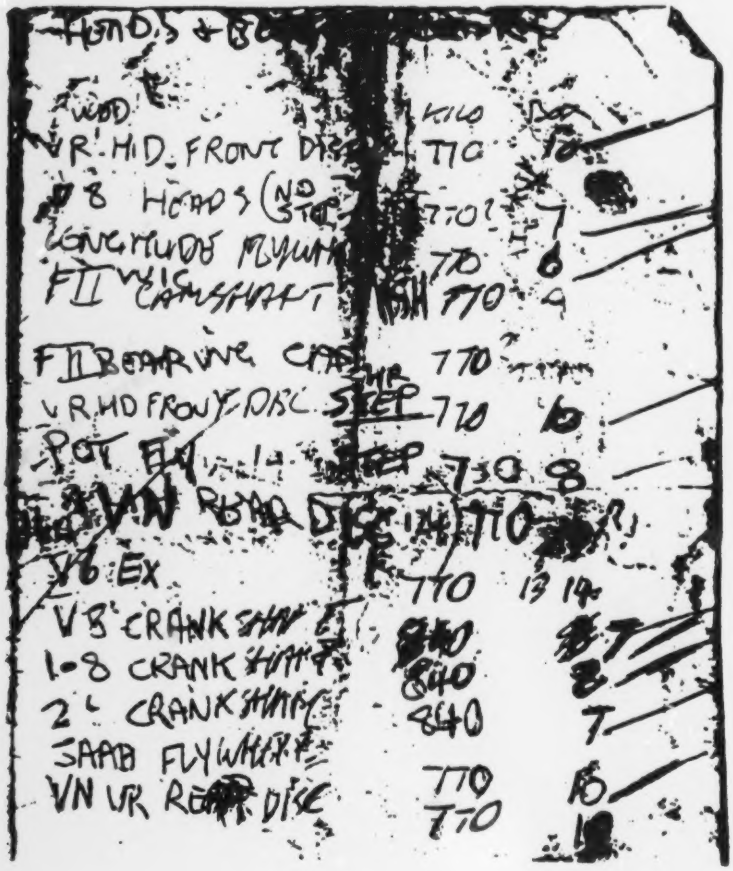
The inoculants are added to promote a Smooth pour and to influence the cooling rate of the metal.

Tests For hardness.

Risk Taking in Literacy, Language and Learning

Shaping and nurturing the overall development of participants as individuals, involved gradually increasing the level of complexity, diversity and risk taking in the learning activities to encourage active and reflective learning and independence. It also involved careful monitoring to allow for both a plateau phase and acceleration depending on individual response to change. This strategy is highlighted in the following examples:

1. The first example is of an employee, whose first spoken language was not English, although he attended school in Australia and speaks and reads in English. As he writes very little in English, he felt very intimidated by the prospect of a formal practical study. It was therefore introduced in stages. As his confidence developed, the learning risks and complexity of the research increased.

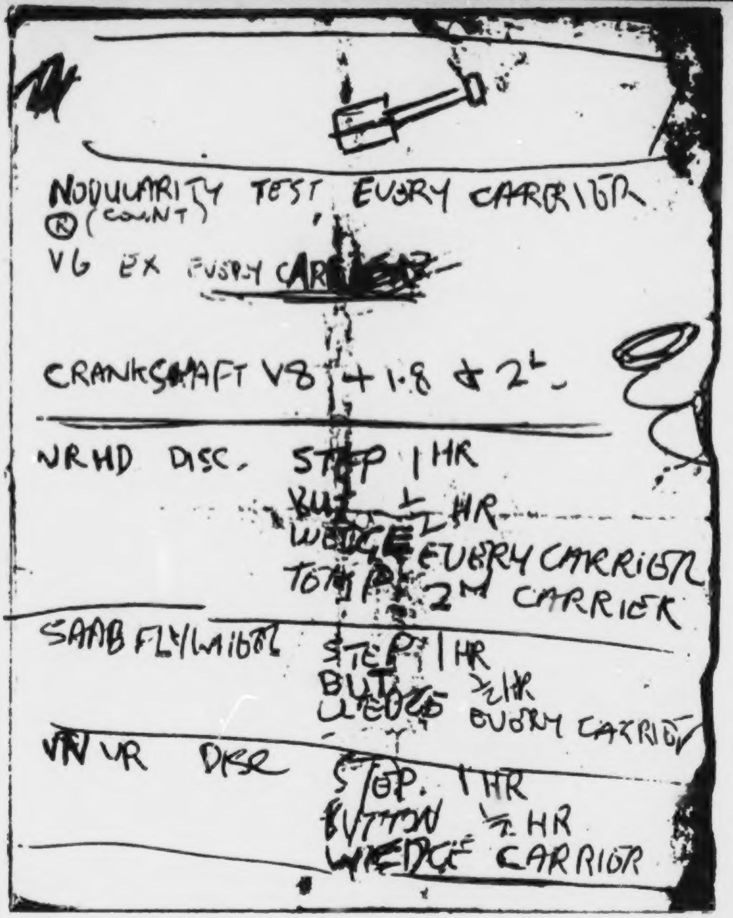


HEADS & 8[illegible]

WOD	KILO	[illegible]
VR HD FRONT DI[illegible]	770	10
8 HEADS (NO STEP)	770?	7
LONGITUDE FLYWH[illegible]	770	6
FII V6 CAMSHAFT	770	9
FII BEARING CAP	770	
VR HD FRONT DISC STEP	770	10
POT [illegible] STEP	730	8
VN REAR DISC	770	[illegible]
V6 EX	770	13 14
V8 CRANKSHAFT	840	7
1-8 CRANKSHAFT	840	8
2L CRANKSHAFT	840	7
SAAB FLYWHEEL	770	15
VN VR REAR DISC	770	1[illegible]

Excerpt 1 illustrates his monitoring (on the back of his payslip) of the casting type, number of castings and number of moulds. He did this while he and others poured molten metal during the night shift.

BEST COPY AVAILABLE



NODULARITY TEST EVERY CARRIER
Ⓡ (COUNT)
VG EX EVERY CARRIER

CRANKSHAFT V8 + 1.8 & 2L.

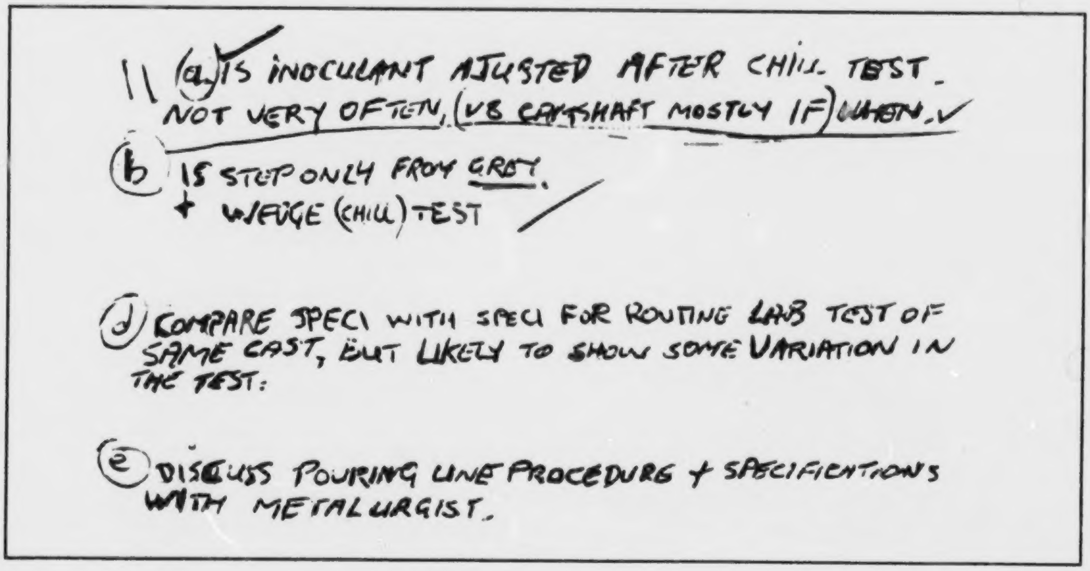
NRHD DISC. STEP 1 HR
BUT ½ HR
WEDGE EVERY CARRIER
TOTAL P 2ND CARRIER

SAAB FLYWHEEL STEP 1 HR
BUT ½ HR
WEDGE EVERY CARRIER

VN VR DISC STEP. 1 HR
BUTTON ½ HR
WEDGE CARRIER

Excerpt 2 illustrates his monitoring of the quality control tests done during the shift.

Excerpt 3 illustrates some of the questions he worked out with Jane Sims during conferencing to help him shape his investigations.



11 ⓐ IS INOCULANT ADJUSTED AFTER CHILL TEST.
NOT VERY OFTEN, (V8 CAMSHAFT MOSTLY IF) WHEN. ✓

ⓑ IS STEP ONLY FROM GREY.
+ WEDGE (CHILL) TEST

ⓓ COMPARE SPECI WITH SPECI FOR ROUTINE LAB TEST OF SAME CAST, BUT LIKELY TO SHOW SOME VARIATION IN THE TEST.

ⓔ DISCUSS POURING LINE PROCEDURE + SPECIFICATIONS WITH METALURGIST.

BEST COPY AVAILABLE

Excerpt 4 illustrates his work after extensive conferencing/rewriting and typing.

2.6 Reducing Chill

An inoculant is added to the molten metal while pouring from carrier to ladle to control the cooling rate, so that the amount of chill is controlled.

Inoculant [...] is used in grey iron and contains

[...]% Silicon	[...]% Barium
[...]% Manganese	Balance - Iron

2.7 Recording Test Results

The results are recorded in the ***Ladle Analysis Record*** in the master control room.

He was anxious to have several practices at his oral presentation alone before the final session and remained back an extra 2 hours after the 7.30 - 9.30 a.m. class on several occasions to work with Jane. Given that he had already worked all night before the class, his commitment to learning was considerable and deserved careful support. Prior to the final presentation another learner stayed back to be the "audience" for a practice run.

He did well in his presentation but then needed a plateau phase to reflect without further learning risks and anxiety for a while. He has returned to study core VIC units in 1994 and is now taking a leadership role and more risks.

2. Another employee, of English speaking background, reflects a different response to learning risks. He was assertive and confident from the outset, as he followed up his research investigations, carried out the tests and documented all his efforts in rough notes. Immediately prior to the oral presentation, he withdrew from the program and resisted the entreaties of his peers to "have a go".

   When all the presentations were over and his mates glowed with pride in their achievements, he made tentative steps to return to the program. With help from Jane Sims, his supervisor Mick Grath, and the superintendent Nick Papadam, he revised the precious research notes and regained his confidence to write up his report and practice his presentation. He presented his study very well, then quickly moved to new challenges without the need for a plateau phase.

   In both examples above, long standing anxiety about writing had to be overcome.

Language and Reflective Thinking

An essential element of language acquisition in the Foundry Elective was reflection on learning experiences, leading to new insights or a change of mind set. Learners were encouraged to use those language facilities, English or first language, which provided the most effective analytical, creative and reflective strategies for thinking and to share that thinking in dialogue and debate. The teachers constantly named and connected these contributions to new insights, for example, *"Do you remember when Mario explained to us why the tundish is used on the carrier...."* was linked to *"What did the laboratory technician tell us about magnesium and how it affects the microstructure of graphite"* and to the microstructure images seen through the microscope monitor.

Individual learners were deliberately set preparatory or follow-up tasks to stimulate reflective behaviour. Soon they began to take the initiative themselves, as illustrated by the following, *"I was thinking about what we talked about last week and went to ask Dennis (the metallurgist) why the swarf was put ..."*

One of the key indicators of engagement in reflective learning was a typical comment on arriving at class, *"I've been thinking about ..."* or *"I asked Nick if I could bring this sample along to explain what happened with the discs we ran this week - its exactly what we were talking about a few weeks ago ..."*

Diagrams and flow charts were used frequently to illustrate, and make concrete, linear cause and effect concepts as well as to construct more complex diagrammatic systems which illustrated interrelationships.

Using Mathematical Ideas and Techniques (Mayer)

Mathematical concepts permeate all aspects of daily work in the Foundry. The program participants frequently used mathematical applications related to their own area without much difficulty but were not confident in other areas.

Similarly, although they were all familiar and confident with decimals in relation to money, only those who regularly used decimals for dimensional checking or reading gauges, believed that they understood decimals.

Learner perceptions of themselves as *"not good at maths"* dominated any direct enquiries about past experiences in Maths. The sight of graph paper was particularly anxiety provoking. Therefore, the teachers decided to treat mathematical learning, including language concepts, in a fairly pragmatic manner with activities and content always derived from the workplace.

For instance, Interpretation of Graphs began with raw data (dip temperatures) and dates from the core room and a blank sheet of paper. The task was to derive a way of representing the temperatures (vertical axis) and corresponding days of the week on another axis. *"How would we know if the temperature was too high or too low?"* led to investigating the upper and lower temperature limits and the drawing in of control lines. At this point it was safe to transfer to graph paper without major catastrophe. When the task was completed, the learners were able to look back at the temperature records for the week and match an *"out of limits"* point with corresponding information from the core room defect report about defects due to high temperature of the dip. Language concepts needed to be named and connected with existing knowledge e.g.

horizontal axis with horizon, horizontal plane, etc.

Having learned to construct a particular 'story' in graphic form, the focus moved to reading and interpreting the 'stories' of other graphs, recognising them as being shorthand visual information showing variations (trends, changes, stability, etc.) in processes or materials.

Learners were encouraged to share past educational experiences, for example some Vietnamese employees had learnt to use slide rules for making calculations.

A number of learners collected and used statistical data and mathematical applications for their practical studies, extending their understanding and confidence in using mathematical tools.

The curriculum content gives some insight into the mathematical information used directly or indirectly by Foundry operators. As the Company moves to more employee involvement in monitoring processes, these employees will, in groups, be expected to collect their own statistical data or make more use of material currently available but often used only by supervisors.

Assessment

Assessment was designed to be both formative and summative and employed an holistic approach, integrating one or more competencies, specific knowledge and its application.

The formative assessment included:

* participation in practical activities in the classroom, and in both production and non-production areas of the plant during two hours per week sessions. Activity sheets were used to guide learning, provide language assistance and to record important concepts investigated in each session. An example can be seen on the next page;

* contribution to organising plant activities and exercise sheets to guide the groups;

* demonstration of tests and operational tasks (leadership role).

The summative assessment included:

1. A major practical session conducted by Terry Klass at RMIT Foundry School. This learning experience involved making a sand mould casting to demonstrate understanding of the general principles underpinning mould making and pouring. The learning outcome was assessed according to the following criteria:

    * identification of the parts of the mould;

    * explanation and demonstration of:
      - compacting the sand,

Task 2
group

Analysis Activity
Interpreting Quality Performance Data

- Construct a bar graph showing the annual percentage of OK Castings (% by weight) at HEC.

- Discuss the following questions:
  - What impression does the bar graph give of HEC Quality Performance?

  - Are defects increasing/decreasing?

  - Has the criteria for quality (OK castings) changed from previous years/months?

- Construct a line graph comparing monthly percentages for OK castings 1992-93
  [Use the data from the Foundry Quality Performance graph.]

- Calculate the average of OK castings for 1992

- Draw in the 1992 average and compare with the 97.00% World Class Castings average.

Deakin, Sims

Quality Assurance 1.3: Activity Sheet 1

  - aerating the mould,
  - providing a gating system, vents,
  - positioning of the core,
  - ensuring an accurate fit/match of the mould,
  - checking the pouring basin;

* explanation of variables - mould defects and their causes.

2. A comprehensive formal assessment of simulated live tasks, conducted over a period of 4 hours, met the assessment criteria for all eight units. It also sampled application of key competencies e.g. problem solving, analysis of information. The live tasks used workplace samples, documents and equipment set up at different work stations around the classroom and drew upon language, literacy, conceptual understanding and workplace experience.

   Participants were able to move freely around the room, revisiting items and adding to their answer sheets. Some tasks required oral responses so that the assessor could explore the participants' understanding rather than accept simple answers. Participants appreciated the chance to explain their responses without the constraints of written conventions.

   Where the participant had difficulty writing an answer they were encouraged to explain it in words then attempt to draw or write about the answer. This oral rehearsal helped to clarify and sequence the ideas. They were also encouraged to use foreign language dictionaries or seek the teachers' assistance in rephrasing the question to maximise their capacity to respond.

3. The research assignment (Practical Study) described in Section 6.4 was intended to be both a learning experience and an assessment task. Page 117 shows the requirements for the Final Presentation of the Practical Study, including details of how the presentation is to be made and the assessment procedures.

FINAL PRESENTATION OF PRACTICAL STUDY:

Record of Research -

including data collection, project log, samples, documents, notes of experiments, interviews.

Analysis and Documentation of Information -

Written Report -

including charts, graphs, illustrations.

Class Presentation (5-15 mins) -

including main points of the project, findings, conclusions, recommendations and the use of suitable aids.

ASSESSMENT:

Record of Research -

log of activities including plant visits, interviews, tests, conferences and work done.

Analysis and Documentation of Information -

graphs, charts, tests, work practices.

Conferencing -

discussion and review of project at critical stages.

Written Report -

following layout of study brief and including rough drafts.

Class Presentation -

presentation skills and knowledge and understanding of content.

Deakin, Sims

Foundry Practical Study: Activity Sheet 7

7.7 Observations and Reflections by Peter Waterhouse

RMIT and Links to Other Courses

One important aspect of the curriculum development at HEC was to increase options for the trainees. The involvement of RMIT in the pilot program assisted this process. One of the activities mentioned earlier was the practical session at the RMIT Foundry School. Here the students were able to participate in core making, smelting and pouring processes so that they could see and more fully understand the principles and processes of their day to day work at HEC. Terry Klass explained;

> *... well with the production foundry process which they run at HEC, everybody works in their own little area, and* [they] *don't really get to know the overall picture. So basically what that module was about was to give them a broader picture. By bringing them here* [to RMIT] *and getting them to actually make a mould by hand and then pour the mould and do the whole thing by hand, that was to enhance the teaching program at HEC. I think that worked quite well. ... I think it gave them a better understanding of the whole process. I think that was invaluable...*

This experience had the added advantage of providing the participants with a brief taste of what it might be like to undertake further studies at a place like RMIT. Referring to the practical learning activities and the assessment for the HEC Foundry elective Terry Klass commented;

> *So far as the assessment goes, I'd be quite confident that the people who passed that particular module, when they come along here* [to RMIT] *and say "I've done this module in the VIC process." I'd feel quite confident that they had a fair understanding of the curriculum they studied.*

The Foundry Elective provides a good basis, should VIC graduates wish to pursue further studies in Foundry Technology. Terry Klass again;

> *What we're talking about is articulation into a higher course basically, an Engineering Associate Diploma or Advanced Certificate course. ... I feel quite confident in saying they will be able to get exemptions in a couple of the modules that are being written for the new Advanced Certificate/Associate Diploma course. ... They will be a couple of jumps ahead of anybody starting fresh. They will get some recognition of prior learning* [for] *the VIC module.*

Terry noted that one graduate of the VIC program at HEC has already enrolled at RMIT and is doing well in further Foundry Studies. He, and another HEC employee who went to RMIT a little earlier will be the first to benefit from the articulation arrangements negotiated through RMIT's collaboration in the pilot project. As Terry explained;

> *... the course they've entered into is still in the old subjects so it's very difficult to give them credit in those subjects, but once the new modules come out we'll be able to give them exemptions in those modules.*

Through this kind of articulation the integrated training at HEC is opening up pathways from the shop floor into the VIC and its recognised career structure and for some, onto Higher Education and the further opportunities that may provide.

Post-Taylorist Training, Integrated and Holistic

One of key themes emerging from the transcripts was a sense of trainees developing an understanding of their role within the context of the entire production process. As Jim Mavridis stated,

> *I think probably the guys would agree, I think we've learnt more about the actual process ... I couldn't get over the lab. for a start. I had no idea that they did this, they did that, I mean I* [only] *knew they did a few little things,*

Another student confirmed Jim's observation;

> *... I think Jimmy's right there. From coming to the VIC we've learnt a lot, not only how the different cores* [are made]*, and how to put a core into a mould ... but like a bit of background behind it, like why do you do it like this and why can't you put that in, and what's wrong if you do this, and what needs to be done to you know, rectify if you've made a stuff-up, you know, things like that.*

Andrew Bennion, another participant in the program added;

> *And we've learnt about other sections, like where we weren't working. Like a lot of us move around, but like the melt area, we haven't worked .... [but] we've learnt right through the melt area, the tests, the spectro analysis tests, all the you know, the control room and all that. We wouldn't have got near that without the course.*

The point being stressed here was the importance of learning about the other aspects of the manufacturing process, those aspects that were beyond the participants' immediate work experience. As Jim stressed, they weren't just learning about their own immediate jobs;

> *Oh no, it's the whole process ... at least we know now what's in there, so it gives us a better idea if we want to query something.*

Ali Imran Syed, another participant in the class explained that the program helped him gain an understanding of the Try-Out processes. Ali had been involved in Try-Outs before, but he never really understood the process.

> *This process has been very good for us. ... My project was Try-Outs. I have done this Try-Out as a production worker, but I didn't know how things happen. Now I understand why the changes come in and how does it happen and what is the result.*

This broader understanding of the workplace extends not only to a fuller understanding of operations within the plant, but to the place of the plant in the broader scheme of things. Necmetin Yilmaz commented;

> *There's also things like the regional market. They explain things like that, like what part of the world we're in and what the future's gonna be for the company and what they want out of their employees for the future.*

Jim also commented on the competitive nature of the market and how this impinges on the work of people at HEC.

... if we can sell an engine to Holden in Adelaide and they put it in a car and sell it to you, well we've sold another Holden and not another Honda. You know? It's just fierce competition at the moment, you know, worldwide. So you either have to be competitive, or dead - you just close down.

Jane Sims commented on the way the team quite consciously set about promoting this broader understanding. She stressed that there was always the intent to help the participants have a more comprehensive picture of HEC and its operations. For Jane this often involved helping the group to "unlock" and share knowledge that was already within the class.

Elsewhere in this interview Jane stressed that this process was an educative process which she likened to a kind of awakening.

... What I think we did was to [extend their awareness and] *encourage them to think about the issues as they arose, think about their position in the company, think about the before and the after in terms of the production line. And encourage them to think about themselves as people, where they as people fit into this.*

Interest, Involvement and Enthusiasm

This broad perspective in the training was at least partly responsible for the high levels of interest and enthusiasm demonstrated by the trainees. This was remarked upon, not only by the teachers directly involved in the program, but by virtually everyone who had any awareness of or involvement with the pilot program. John Marks, Production Manager from the Foundry noted;

I've been left with an over-riding sense of the amount of enthusiasm that's been displayed by the participants.

Indeed John noted that the participants were so enthusiastic about the program that he was at times almost reluctant to ask them how they were going:

... if you only had two minutes you wouldn't stop to ask because you'd get half an hour of enthusiastic response ... and you couldn't get away.

Nick Papadam, Foundry Superintendent, also commented on the level of commitment and enthusiasm demonstrated by the participants in the program;

I've found guys here four hours after their shift has finished, not on company time, coming back and following up on their projects. Their level of enthusiasm is outstanding and I couldn't have asked for more.

The participants themselves commented on their interest and involvement in the course. Andrew Bennion noted that it wasn't easy coming off a night shift to front up for training and stay alert. Initially he was sceptical about whether it would be worthwhile.

Quite seriously, when I first started I wasn't quite sure what it was gonna be like. I thought, "Oh, yeah, what if we turn up for this, what's it gonna be like? Probably sit down for two hours and fall asleep." But actually throughout the whole thing it's been pretty interesting, ... they talk about something so you know the background to it as well. You come in, two hours looks like it's too hard to stay awake *especially coming off night shift. But it's pretty interesting.*

Mario Alibrando said,

> *It's been good. I find it very interesting. You know, a bit of everything, like Fettling, Mould Line, Core Room and all that sort of stuff, it's quite good. ... I found it very interesting.*

Speaking on behalf of the union, David Smith, also commented on the participants' involvement and enthusiasm. He argued that the collaborative process of curriculum development was a key factor in stimulating this level of interest.

> *... it's an important part of the process because it gives those people out on the shop floor the ownership of it basically, ... They're all experts out there on the shop floor and you just tap into that expertise. Suddenly they've got ownership, ... Like you see that for instance in the HEC program where people can't wait to get to class to discuss their area because they're not that clock card anymore, they're people.*

David also argued that this sense of ownership and involvement was fundamental to the development of an effective workplace learning culture.

> *The other thing I've observed, is once people do get involved, they want to keep training as well. So if we're talking about creating a training type mentality, where you start at school and you never stop learning, ... well that's the type of culture that this integrated model is being successful at developing, on going training.*

David summed up on the integrated model, from the union's perspective;

> *Certainly we thoroughly support the NALLCU principle to integrate the language and the literacy into the training and to give support to participants where required ... One, it gets them in; but two, it develops a training culture as well.*

Overall, feedback on the program was extremely positive. John Marks was asked to explain the high levels of interest and enthusiasm. He indicated several interrelated factors:

* the enthusiasm he argued, was not entirely fiscally induced, other factors seem to be at least as important as money;

* for many employees this was their first real opportunity for such a learning experience;

* the curriculum was relevant, and seen to be relevant, to the participants and their workplace situation;

* supervisors were dedicated and supportive;

* the teachers involved were dedicated and strongly committed to the success of the program;

* the culture change working its way through the organisation helped provide the climate for the project.

Developing Relationships, A Changing Workplace Culture

Another outcome identified through the interview data is related to the last point in the list above. The project has provided evidence of changing workplace relationships. Jane Sims saw this as one of the most important outcomes of the project.

Interviews with management seemed to confirm Jane's impression that perceptions had been changed. Bryan Bardwell, Senior Staff Engineer, noted that the project had shown employees in a new light;

> *... they're learning more, they're keener, they're probably showing more of their worth, rather than being just a straight machine operator. I mean there's a lot of people out there that really shouldn't be just machine operators, they've got more talent than that. It does highlight a lot of their strengths that we haven't seen before and I guess for future development it's great.*

Nick Papadam admitted that at first he had been concerned at the level at which the curriculum was pitched. He feared it might prove to be beyond the capabilities of many of the participants. He was very pleasantly surprised.

> *I would have tried to come in maybe just a bit lower with some of the things ... so they could cope with it a bit better. But to my surprise, well not really to my surprise, to my amazement, these guys have tackled some fairly hard topics and done it with flying colours. They've done it very well.*

John Marks made similar observations. He noted that some people had investigated topics which had also been in the "Problem" trays of some of the company's engineers. He was impressed with the quality of the participants' projects and their outcomes.

> *They've done remarkably well. Without exception all of the people have commented on how much they have learned ... Their dedication and what they've put into their projects has been very impressive.*

The impression of changing perceptions was not limited to management. Some participants in the program noted how their perceptions had also changed. Mark Mifsud, a participant in the program, noted that the program led to new impressions, not only of the workplace but of the people in the workplace, including supervision and management personnel.

> *... even like the people, ... Like Nick,* [the Foundry Superintendent]*.. you'd see him walk past before and you'd say "Who's he?" you know? Now you know kinda what he does and what his purpose here is, you can approach him.*

Elsewhere in the interview Mark noted;

> *This course with communication, now I'm speaking more with the foreman than before. I'll just ask 'em anything these days, it could be on anything. He'll sit me down and tell me all about it.*

Other participants agreed with Mark's observation and Andrew Bennion added;

> *As he* [Mark] *said, now we can go about and actually talk to them. Whereas before it was sort of like "Oh, yeah, what would I want to go and speak to him for?" But now we can, now we know 'em.*

It is important to note that these changes were not accidental or unintended outcomes of the process. The project officers quite consciously sought to promote a learning culture within the workplace. The development of such a culture entails co-operative relationships and open communication.

When interviewed about the project Jane Sims described her position as being somewhere "in the middle", between management and the shop floor employees. Jane saw her job as one of facilitating more effective communication and developing relationships more conducive to effective workplace learning.

Promoting more effective workplace relations also extended to race relations in the workplace. The nature of the classes at HEC was that they were mixed ability and multi-lingual, multi-cultural groups. David Smith, speaking for the union, noted that the nature of the groups was conducive to breaking down traditional ethnic barriers and promoting effective working relationships.

> *... like at HEC, within the class you've got quite a few people from different ethnic backgrounds, ... to actually see Vietnamese, and Greek and Italian and Turkish and so many other nationalities sitting in one room; it broke down the barriers. Now I don't know whether it existed before, but certainly there was no racial tension there - because it generates this group-team approach where people get in together and people start to understand why things happen.*

Critical Thinking and Problem Solving

Actually before we know only what we do. Now we know why we do.

The comment above, from one of the participants in the pilot program, captures the essence of many other comments made about the curriculum and the learning processes. Throughout the interviews there was a recurring theme which highlighted the way those involved with the program had been encouraged not only to learn more, about their jobs and their workplace, but to think differently about their work, their workmates and their workplace.

This focus on critical thinking, on asking "Why?" meant that the program moved beyond merely giving people information, or developing new technical skills. This kind of learning can not be adequately described in quantitative terms, it's not so much a matter of knowing more, it is about developing a new kind of awareness. The participants in the program were confident that this new awareness was not only enhancing their own understanding, but in the longer term would offer substantial benefits to the company. As Mark Mifsud noted,

> *... like we know what goes on and what happens if it does go wrong. So we're more aware now. You know, most of the time.*

Speaking on behalf of the union, David Smith noted that this kind of thinking is directly related to the processes of workplace change. He argued that shop floor employees must have a critical understanding of their work processes.

> *Work change, ... really starts right at the bottom. Unless you can get the people from the shop floor involved ... like you see at HEC, where the people say; "Well now I know what happens before it gets to me,* [and] *after it gets to me, - I can actually recognise a fault, I can go and rectify it, or whatever. To me that's really the beginnings of work change, the real guts of work change.*

Two specific examples of this kind of thinking were offered in a group interview with participants; the first concerned the cost of core boxes which are routinely used as part of the production process for cores within the foundry. Participants noted that a fuller appreciation of how these cores boxes are made and what it costs to produce them - *"They said some ones* [cost] *up to sixty grand!"* - led to a new respect for the core boxes and concern to avoid damage to them and the consequent waste. As Ali Imran Syed explained;

> *It can be damaged,* [this] *costs money.* [Now] *the quality is improved, because each of the guys is more aware of their section, more better than before, and they not let past the problem. ... So we reduce waste and reduce the problems in the castings.*

The second example cited in the interview involved an incident a few weeks earlier in which one of the class participants had identified a significant defect in the gating system on one of the castings which had been introduced to production. Andrew Bennion observed;

> *Yes, with the gating system. We knew nothing about a gating system and now someone's found, through the VTC, someone's discovered a defect in the gating system.*

Such incidents are impressive testimony to the potential that exists for more cooperative and productive workplaces in which ongoing learning, problem solving and critical thinking are part of the workplace culture and in which employees are empowered to be involved in the decision making processes.

After the pilot program, John Marks made the observation that the company could benefit from employees being more directly involved in problem solving and continuous improvement processes;

> *... one of the areas that we have not done well enough in the past is actively soliciting and involving our people in continuous processes of continuous improvement.*

It is also important to note that it was not only the class participants that were affected by the project. Educational ripples spread throughout the plant wherever people were involved. Once again, this was a conscious strategy directed to promoting the desired workplace learning culture. For instance, John Marks observed that the processes of the pilot program had also stimulated critical thinking amongst managers and supervisors.

> *... some of the questions that the guys have been asking; (a) when they've been doing their weekly work with the classes; and (b) in trying to put their projects together; it's quite frankly made us re-think and re-evaluate why we do things. ... I think it's been a very testing time for some of our supervisors as well. In that it's made them think about the reasons for them doing things the way they do.*

An important point to note here is that the curriculum which stimulated this critical thinking was neither general nor abstract. It was well grounded in the particular realities of the HEC Foundry. Speaking on behalf of the union David Smith noted;

> *... you virtually need to go to each enterprise and write the curriculum that's specific for that enterprise. ... It's not so much the delivery of the training that the enterprises can't cope with, it's the development of the curriculum into something that's really meaningful and the integrated approach to developing the curriculum does give you something that's meaningful. Our members get something out of it; the company gets something out of it; ... the Government's getting something out of it because that's what they want - more productivity for the enterprises.*

Time and Processes of Change

Another theme which came through the data was a sense of the time required for these development and change processes. Nick Papadam sees the approach demonstrated through the pilot as commendable and he envisages long term benefits. However one of the major points which he wanted to make about the program was that it needs to be viewed within a broad framework which allows time for the necessary developments.

> *I think the benefits I see are long term, ... We are trying to change culture at the moment and what we're trying to say to these people out here is, you've got the brains, let's utilise them. There's a lot of things we can do with our employees, we've just got to harness their ability and we've also got to give them the authority to do it. That's one of the* [key] *things.*

With respect to this latter point Nick stressed the importance of a company notice from Peter Thomas, the Managing Director of HEC. This notice had been posted on boards around the company, including the foundry. In effect it authorised any company personnel, including shop floor employees, to "place a temporary hold" on a product or service which they believe to be not up to standard. On the factory floor this could translate into stopping the production line if something is not right. Whilst Nick stressed that senior management are serious about employees being empowered for such involvement, he also stressed that the culture change takes time.

> *Probably to be perfectly honest, one of the problems is they don't have a lot of confidence in us because of probably some of our funny old style management practices and what we're doing now is we're saying to these people we want to hear what you've got to say. But there's gotta be a trust period, there's gotta be a learning period, and I see long term benefits in what we're doing here and hopefully it will flow onto our people.*

A little later in the interview Nick reiterated this theme, stressing that the changes would take time.

> *I don't know personally, what a lot of people expect to see because you won't see change at the workplace, I don't believe, for another twelve or eighteen months. It's coming, and there are people picking up extra jobs, but before we really get a lot of great reform from the actual people on the floor, and from some of our people in management, we need to do more work because our own supervision are probably a little bit frightened of it. ... It is threatening* [for them] *because they're not sure what it's about ...*

Nick stressed the importance of keeping supervisors fully involved and on-side, their time and support is required if the change processes are to be implemented effectively.

They're with it, but they're reluctant because what we're sort of saying to the supervisors is - let the guys make the decision - and the supervisor sort of looks at you and says, but he won't get it right - [and you need to say] *- So what? He needs to learn. So there's a bit of culture change ... the supervisors again, are a little frightened. Luckily at the moment we have some new supervisors, they're coping with it a lot better, ... some of the older one's are finding it more difficult.*

Nick also stressed that the training, as it was developed through the pilot program, did require an investment in time. Indeed more time was required than he anticipated. Nevertheless he felt there needed to be an appreciation that it is necessary to invest the time if the outcomes are to be those desired.

I think none of us realised how much time this was gonna take and it's something that it does take time for these guys. Like with their assignments, ah, with their enthusiasm and what we've got to do, we've got to at times say to ourselves let's get on and help them, 'cos I know at times, like with the pressures of the day, there's times when you get a guy come up to you in the middle of the morning and he says, "Can you help me?" You've got to stop and say, "Yeah, I will."

Bryan Bardwell made a similar observation;

We afford them as much time as our job permits. Ian for example who actually works here with me was working with two [of the participants in the program]*. He spent quite a lot of time with them, quite a few hours I think, over a few days, you know.*

Terry Klass felt that his major concern about the pilot project was the time involved. He felt that virtually everyone underestimated the complexity of the task facing the project team and the time which was required.

I think people underestimated the time to put it all together. You know Jane and Rosemary worked through the night on a few occasions. I mean through the night until the next morning. ... I mean I thought that was a bit sort of over the top. But given the timeline that we had to meet, it was fortunate that they did do that and were willing to put in that time because otherwise it wouldn't have got there on time. ...

I think it's such a large complex process, you know. The management people there have been working in that area for years and years ... and it's taken them that long to know the whole thing fairly intimately - and that's what we had to do in a short space of time. Very quickly we had to become intimately familiar [have an] *intimate understanding of every process that went on throughout that particular foundry. And there's a heck of a lot of people there and a heck of a lot of things going on. And we weren't allowed to get any of it wrong. So you know, ... you certainly need more time than what was given.*

John Marks also acknowledged the issue of time and complexity. He commented at a Project Steering Committee meeting on the curriculum development process being more challenging and time consuming than originally anticipated. Nevertheless he remained committed to the view that it was better to get it right, than to sacrifice accuracy, relevance and appropriate learning strategies for the sake of a proposed timeline.

John Marks indicated that perhaps the complexity of the process, ie. putting all four areas of the foundry together and linking it with the continuous improvement theme, had been underestimated, turning out to be more work than anticipated.

He confirmed HEC's concern that the curriculum accurately reflect the foundry procedures and be useful in both the short and long term.

He also indicated his hope that the union would support focusing on getting the material right rather than focusing on a certain date. It was agreed that the timeline should be revised ...

(Extract from Minutes of Project Steering Committee Meeting: 25.5.1993)

Even with the revised timeline however the Project Team worked under duress, striving to develop draft curriculum just one step ahead of the students working with the curriculum in the pilot project.

Teachers' Commitment

Another key issue which must be commented upon is the stakeholder's perceptions of the teachers' commitment to this program. It was universally commented upon and several people cited this as a key factor in the success of the pilot program. Nick Papadam was particularly adamant on this point;

> *... it's the ladies enthusiasm that's pushed past all the supervisors. If you had someone who wasn't as committed, and again, I can't stress this enough, as committed as these two ladies, it wouldn't have got off the ground. Cos they come in, they're bubbly, they know what they want. They're quite prepared. They know when we're busy and they step back. They'll say; "Look I'll come back." or "I'll go and do it for you." or something. They NEVER EVER say, "Oh here it is, it's your ball, take it." Not once have they ever done that. And I reckon at times they must have got terribly frustrated.*

Nick elaborated on the issue of frustration, citing the example of how difficult it can be even to catch up with him.

> *I know how hard it is to track me down, ... I'm permanently on the move. I very rarely get a chance to sit in this office and I've turned around and there they've been, and I've never sort of said no to them because I know how busy their day is and I know the hours they've put in.*

Nick's comment here was more than an acknowledgment of conscientious professionals doing a capable job. He wanted this point stressed;

> *If you were going to say anything in your report and I can't say it for you, but I think that's the area you should be stressing, because unless you've got commitment from whoever is taking part in it, the things not going to work. It's just going to die.*

As noted above, Nick's comment was not unusual. Bryan Bardwell observed;

> *They've certainly given the participants a lot of time, a lot of time,* [Bryan's emphasis] *I don't know whether they get paid overtime or not but they have put in a lot of hours and I think they are certainly two dedicated people. Very much so and I don't think anyone could have done much better than what they've done.*

John Marks also paid tribute to the teachers involved in the project. Referring to the company's original initiative with RMIT he noted the importance of the changes which resulted from NALLCU's involvement.

I think that if it had stayed at us and RMITwe wouldn't have got the results we've got ... In the end we would've been lost without Jane and Rosemary. The thing would not have worked. We would not have had the patience. We would not have had the time.

Teachers' Learning Through Collaboration

Another theme to emerge from the interviews was the importance of the teachers as learners within this project. This issue was noted in several different ways.

Some of the students seemed intrigued by the notion that the teachers were also learners. This role reversal placed the students and other employees in the position of teaching - helping the teachers to understand HEC, the foundry and its processes. One of the participants in the pilot program noted that the teachers had learned through listening to the employees at HEC.

It's been funny because they've been learning as well as we have. [They have learned a lot] *by listening to us* [employees]. *They've taken knowledge off us and taken it back and put it in the course.*

The Project Team felt that their status as learners within HEC was an important element in the way they built relationships with staff and students and in the approach they took to the training. Jane Sims noted;

... the other thing that I think is very important, ... [is] there was a sense of us learning in parallel ways with the students.

Terry Klass, the team member with particular expertise in foundry processes also noted the importance of his learning during the project. He described his experience of being on a *"tremendous learning curve"* and appreciated not just learning about this type of production foundry - of which he commented, *"there aren't too many of these around"* - but also the opportunity to work as a member of an interdisciplinary team. He described his involvement in the project as *"a broadening experience all round"*, in that it broadened his experience of curriculum development, facilitating workplace training and assessing learning outcomes.

The teachers' learning did not pass by the HEC management representatives unnoticed either. Bryan Bardwell noted;

I don't think anyone could have done much better than they've done. Particularly when they've come into an industry that is foreign to them ... I think they've done really well to comprehend what they've done and with the way they've developed it.

John Marks also commented specifically on this issue noting the complexity of the processes and how much the team had learnt.

... from what I've seen, they were able to break our process, what is a very complex manufacturing

> *process - I mean to someone who's never been in a place like this, it is a pretty complex manufacturing process, and in the end they were able to break it down into relatively simple lots. And they still had to be very careful that information was not too technically difficult, but it had to be technically correct.*

A little later he added *"I hope that the teachers involved this time can also be involved in the future"*. John felt that the teachers' learning during the pilot project would bear fruit as the training developments at the foundry continued.

Challenge for the Future

The final point to be noted here concerns the challenge which the project poses for those involved with the management of the foundry at HEC. Both John Marks and Nick Pappadam named this issue in remarkably similar ways. Indeed so similar were their comments that it was a surprise to discover that they had not specifically discussed this issue prior to the interviews. John Marks commented on the extraordinary level of interest and enthusiasm generated by the project. The challenge he noted is how to continue the interest and the enthusiasm beyond completion of the VIC.

> *We in fact are going to be left with a little bit of a problem, I believe, at the end of all this. In that we have spent 200 hours educating these people, allowing them to extend themselves beyond their normal job boundaries, motivating them, enthusing them, and after this 200 hours what the hell are we going to do with them? In that they are so switched on, some of them. We are going to have a reasonable task on our hands to keep that level of enthusiasm up.*

Nick Pappadam made a very similar observation;

> *One of my concerns with the VIC and I've raised it with my managers, is that we've got all these guys that we've lit this fire under, right? And the fire's going like crazy. What am I gonna do with them? Where will I put them? So that we don't destroy them or get them browned off and we lose them. The worst thing we can do with something like this is to light the fire and then let it go out.*

The fact that the foundry managers are left with this "problem" is evidence of the potential for integrated training to stimulate and support the processes of workplace change. Whether the energies involved in these processes can be effectively harnessed for a more democratic and economically productive workplace is a question which can only be answered over time. It would seem however that the outcomes will depend substantially on the quality of enterprise bargaining processes between the industrial (and perhaps educational) stakeholders and the nature of the agreements which may be reached.

Endnotes

1. A Try-Out is a dry run or trial, conducted when some variation is made to part of the production process at HEC. Try-Outs are conducted when new models or specifications are introduced or when an adjustment or improvement is made to one of the cores used for casting within the foundry.

2. In this section, the term "language" is used to encompass language, literacy and Numeracy.

3. Described by Mawer, G. (1992) "Developing New Competencies for Workplace Education" in **Prospect** Vol. 7, No. 2.

Chapter 8
Warehousing Elective at Ford National Parts Distribution Centre

Human nature is that you can only be enthused in it if they are. When you see them so enthusiastic about it - I mean I think when people start coming in to do this unit on their holidays - they're on annual leave and they come in, two or three hours to do this unit. That in itself says, "Geez, I want to get this. I want to get on with it."

Barry Bell
VIC Knowledge Trainer

8.1 Background to the Project

Ford's Approach to Training

Ford Australia was one of the first companies to embrace the VIC. Right from the start the VIC was given a very high priority, as part of the process needed to turn around the culture of the company. This was seen by the company as necessary if Ford was to survive in Australia and be internationally competitive.

Ford took the view that they valued their employees and the contribution that they have made to the Company over the years. Therefore, with the agreement of the Industrial Commission, they recognised the years of service that employees had had with the Company by giving Recognition for Prior Learning (RPL), in both the skills and knowledge areas, on a time-served basis.

This meant that older, more experienced workers, who often had leadership roles in the workplace, were given the opportunity to complete their VIC in a much shorter time frame. For people who had been away from formal schooling for a long time, the goal of achieving their VIC, along with the added status, was achievable.

It was considered important to ensure that training was close to the shop floor experience. Thus VIC Trainers were selected from the shop floor to deliver the skills and knowledge units of the VIC. They attended a Train-the-Trainer Course followed by systematic on-going training. Their role was to deliver the Ford training packages to groups of employees who attended classes after normal work hours (with pay at normal rates for half the time).

The knowledge units were divided into 10 hour blocks and groups were formed on the basis of these blocks. Employees choose which blocks they wish to do from the selection available at any one time. The policy of the Company has been to mix employees from different areas together as much as possible.

Other Elective Units that had been developed up to the start of this Project were also in 10 hour blocks. Thus a 60 hour elective would be compiled from a range of 10 hour blocks. As the elective is work area specific, employees are encouraged to select the elective modules specific to their particular work area.

When NALLCU was established in 1992, a new training arrangement came into being at Ford. Most of the English in the Workplace (EWP) programs (12 of 14 classes at the Broadmeadows site) became language-assisted VIC classes. Thus EWP teachers now conduct the VIC in their English classes for employees who have been assessed as having a need for improved language skills. These classes normally take longer to cover the content of the units, with language training incorporated into the classes. Participants are paid for half their total attendance time in these VIC classes. Thus access to the VIC was guaranteed for all workers.

Because of the incentives given to employees; RPL, pay for half their class attendance time, availability of language-assisted classes, and the encouragement from the Company, the participation rate in the VIC has been, and still is, very high in most plants. Motivation to complete the VIC is also high, especially for the older workers who were given RPL for much of their course.

The company sees the VIC as a major plank in their overall training and development strategy. Briefly this strategy aims to:

* Develop a structured and accredited training program for the unionised workforce that links career progression to the attainment of skills and knowledge.

* Provide training to enable multi-skilling and a broader knowledge base for employees.

* Create a learning environment conducive to continuous improvement.

* To provide workplace opportunities for higher education qualifications.

Thus employees at Ford have been able to access their training and the associated wage increases. The very high number of employees who attend in weekends, and during holidays and shut-down times is testimony to the Company's commitment to their training agenda.

Union Response to VIC at Ford

Speaking on behalf of the union, David Ablett, Education Officer with the AFMEU, gave credit to Ford for their leadership on training issues and the VIC.

Ford generally, historically led the charge on the training reform agenda as it was established and agreed through industrial agreements. Ford and Nissan in fact were very keen. They were industry leaders in setting up industry training board structures, actively involved in setting up NALLCU and took a very broad industry perspective of training reform. They were pretty committed to putting the VIC in place and having a nationally recognised portable qualification ... They were the only company that unilaterally introduced RPL. They were the only company that gave commitments to training as many people that wanted to do the training, ... and Ford have awarded pay. They have delivered on wage rises as a result

> *of training reform programs. ... Across the company a lot of people have had pay rises as a result of their participation in training.*

The union was positive about the company's record on training and was pleased that this project would address the integration of on-the-job skills and off-the-job learning.

In commenting on the pilot project, the union spokespersons also stressed the importance of recognising the extent to which the NPDC is not typical of the Ford corporation. The National Parts Distribution Centre (NPDC) is not a manufacturing plant. As such it operates according to different objectives to the manufacturing plants and to some extent it has a sub-culture which sets it apart from other parts of the corporation. Whilst the company has a commitment to training the management at NPDC were particularly committed to training which would facilitate genuine multi-skilling. As one of the union officials commented;

> *... in the warehouse, there's much more of a production imperative, that you need a workforce capable in the performance of their jobs,* [to] *be able to take on more responsibility,* [to] *be able to deal with the stages of production from the supply to you know the picking, sorting, packing to the distribution, customer liaison; you know it's a much broader focus that the company has allowed the employees to be part of. Whereas in Plant One it's still very much, you operate in this area.*

8.2 Establishing a Pilot Program

When the notion of developing an integrated model was first adopted by the NALLCU Project Management Committee in February 1993, Ford made it clear that they wanted to be involved in an integrated training project. The company was committed to the process, the question was in which work area the pilot would take place.

Initially, it was thought that Body Build would be a good area as this would take advantage of some work that had already been done by NALLCU. However, Ford had already commissioned a TAFE College to undertake the development of this particular elective, so to do an integrated model would be to cover old ground.

At this time there had been some complaints from trainees and management in the NPDC, that the VIC was oriented too much towards manufacturing, and that it did not meet the training needs of the warehouse. An elective unit for warehousing had not been developed at this stage and NALLCU was asked by the Ford Training Manager to consider undertaking the development of the integrated elective program in the NPDC.

A meeting was set up between NALLCU and NPDC personnel in April 1993, to discuss the possibility of working on site to develop the warehousing elective. The suggestion was received positively and arrangements then went ahead to establish the project.

A project brief was drafted, a tripartite project steering committee established and project staff were appointed. The project started on 20 May 1993.

Project Steering Committee

The first meeting of the Project Steering Committee was held on 20 May 1993 and it met on a regular basis throughout the project.

Membership of the Committee included:

Chris Wilson (Chair) - Depot Operations Manager, NPDC
Peter Gooding - Employee Relations Manager, NPDC
Robert Agg - Employee Relations Manager, NPDC
Brian Whitcher - Warehouse Manager, NPDC
Len De Kauwe - AFMEU(Vehicle Division), Senior Shop Steward, NPDC
David Fox - Training & Restructuring Supervisor, NPDC
Robin Sefton - Manager, NALLCU
Rosemary Deakin - Curriculum Planning Officer, NALLCU
Peter Waterhouse - Curriculum Officer, NALLCU
David Smith - AFMEU (Vehicle Division), Work Change Adviser

In Attendance:

Phillipa Thomas-Walsh - Project Team Member
Toni Roberts - Project Team Member

Project Brief

The Project Brief was formally adopted and signed by the parties at the Steering Committee meeting on 22 July 1993. The Brief stated the aim of the project as follows:

To design, develop and trial an integrated training model which:

* is specific to Ford NPDC at Broadmeadows;
* focuses on the Warehousing Elective in the broad context of the VIC;
* includes an induction program; and,
* evolves through a process of active participation, consultation and collaboration between management, employees and union representatives.

The Brief further stated the primary objectives of the project. These were to work collaboratively with the personnel at the Ford NPDC to design a learning program based on the knowledge and work practices of Ford NPDC and which used the shop floor language and technology of the warehouse. Secondly, to design an integrated model which used practical activities to meet the learning needs, including literacy, language and numeracy skills, of participants while covering the required content of the Warehousing Elective.

The Project Team

Toni Roberts	-	Project Officer
Phillipa Thomas-Walsh	-	Project Officer

Toni Roberts came to the project from a background in teaching vocational ESL in a SkillShare program. Phillipa Thomas-Walsh had been teaching in Workplace English Language and Literacy (WELL) programs and conducting ESL classes for long term Workcare recipients. The project team worked two days per week, timetabled to coincide so they could work together.

8.3 Ford NPDC: an Overview

Ford NPDC is the National Parts Distribution Centre for Ford Australia. It is situated on Sydney Road in Campbellfield, Melbourne. This warehouse receives stock from the Ford Plants in Geelong and Broadmeadows, other Australian and overseas component manufacturers. Parts are shipped out from NPDC to Ford distributors and dealers throughout Australia. Some stock is also sent overseas, in particular to the United States and New Zealand. The daily dollar value target for shipping out stock is $1.1 million. The current inventory value of stock held in the warehouse is approximately $49 million.

Table 4 **Current workforce at Ford NPDC**

Employment Status	Number
Non-Trade Employees (warehouse)	190
Tradespeople(maintenance)	16
Salaried Staff related to warehouse operations (administration, supervisors, managers)	57
Total:	263

8.4 Curriculum Development Process

To assist the team in developing the training program through consultation and collaboration, they were given office space in the training centre within the warehouse. They were therefore easily contacted, and had immediate access to warehouse personnel.

The team began researching the Receiving process by visiting the various receiving areas and asking the shopfloor personnel to explain what they did, and by observing how they did it. As this was their first experience with this warehouse, this section took much longer to understand than subsequent areas. As Toni Roberts commented;

We had to learn about the computer system, paperwork and terminology used in the warehouse. One example of confusing use of terminology was that the term "fast-moving stock" had a different meaning *in different areas of NPDC. In Receiving, it means stock which is not mixed on a pallet, and does not require decanting. It therefore moves faster than other stock in the receiving process. In the picking areas, and in the Supply department, "fast moving" refers to stock which sells quickly and therefore has a high turnover. Warehouse personnel seemed unaware of this, because they knew what they meant, but for new people such as us coming in, it was very confusing until we identified the two meanings.*

The team's first task, as they visited each area and department in the NPDC, was to understand the work processes, terminology, communication and culture of the workplace. This was time consuming but essential work. Toni Roberts noted;

During our investigations of the warehouse we sometimes felt like detectives without a crime. We found that it was essential to ask a range of people about each function of the warehouse.

The team found that different people had different, and equally valid, perspectives, which needed to be reflected in the curriculum.

For example, personnel in Receiving might see their function as being to check stock as it comes in and enter it into the computer system. The Warehouse Manager, however, sees the function of Receiving to be to get the stock on the shelves and available for sale as soon as possible, thus keeping productivity high. A picker may see the function of Receiving as being to make sure that the right stock gets to the right locations, to minimise picking errors.

All of these perspectives had to be included in the training on Receiving, and the connections made between Receiving and the picking process, and managerial concerns had to be addressed.

Curriculum Workshops - A Snapshot

A feature of the curriculum development process was a series of workshops in which NPDC personnel worked with staff from NALLCU to develop ideas and experiential learning activities for the training program. Toni Roberts explained the purpose of these workshops.

Had we been writing a process manual, we could have documented the shop floor practices and stopped there. But we were writing a training course, not a manual, and it had to be interesting and varied in both style and content. As teachers, we had skills in designing classroom activities, but we had insufficient knowledge of the problems faced in the warehouse to design effective workplace activities. We therefore held two curriculum workshops, using shopfloor personnel, trainers and management personnel to brainstorm ideas for activities and research projects. The results of these workshops formed an essential part of the elective module.

These workshops and their outcomes have been documented in a separate report to the company. The following extract from that report describes part of the workshop process.

The scene is one of lively activity in the company conference room. The large conference table has been split into three smaller tables. These have been pushed to the corners of the room to create three separate work areas.

At each table a group of four or five people is gathered around a sheet of butcher's paper. Each group has one or two workplace educators from NALLCU and three or four company personnel. The company people are mixed; shop stewards, shop floor workers, company trainers, managers and work group leaders are working together.

They are talking about their work. The discussion is quite specific.

"But I never would have thought of that," says the educator, *"the way you stick the tags on, when you stack the boxes on those pallets you turn each box so that the tag is always on the outside like that, so the next person can see them more easily? Even though you put the tags on from this side?"*

"Yeah, we never used to do that," says the workgroup leader, *"but now we think of our customer, like our customer is the next guy down the line. ... So you try to make it easier, try to all help each other..."*

The manager suggests, *"Well that could be an activity, for someone to actually go down there and look at all those boxes and just note where the tags are ... and are they all on the outside? Maybe they could talk to people there about how they do it."*

As the discussion continues, the ideas are being recorded. Problems of implementation are being noted as well as possible solutions. There is a commitment to finding a way to make things happen. The pieces of butcher's paper are being filled with ideas for learning projects and activities which will mesh with the people and the worklife of the shopfloor.

Through these workshop sessions and continuing rounds of shop floor consultations the curriculum was negotiated and jointly developed to meet the needs of the warehouse employees as well as the requirements of the VIC syllabus. It is worth noting that the manager's suggestion, recorded in the extract above, was subsequently taken up and incorporated into the learning activities on Master Labels.

NPDC Curriculum

The curriculum for the Ford NPDC Warehousing Elective follows the chronological sequence of ordering and supplying parts. Administrative and management departments were included where relevant, rather than treating non-warehouse functions as separate from the warehouse. For example the Sales and Marketing Department was dealt with under Orders, as it influences, through public advertising and sales incentives programs for dealers, the types and quantity of orders that come into the warehouse. The aim here was to develop in the trainees a sense of the interrelatedness between all parts of NPDC.

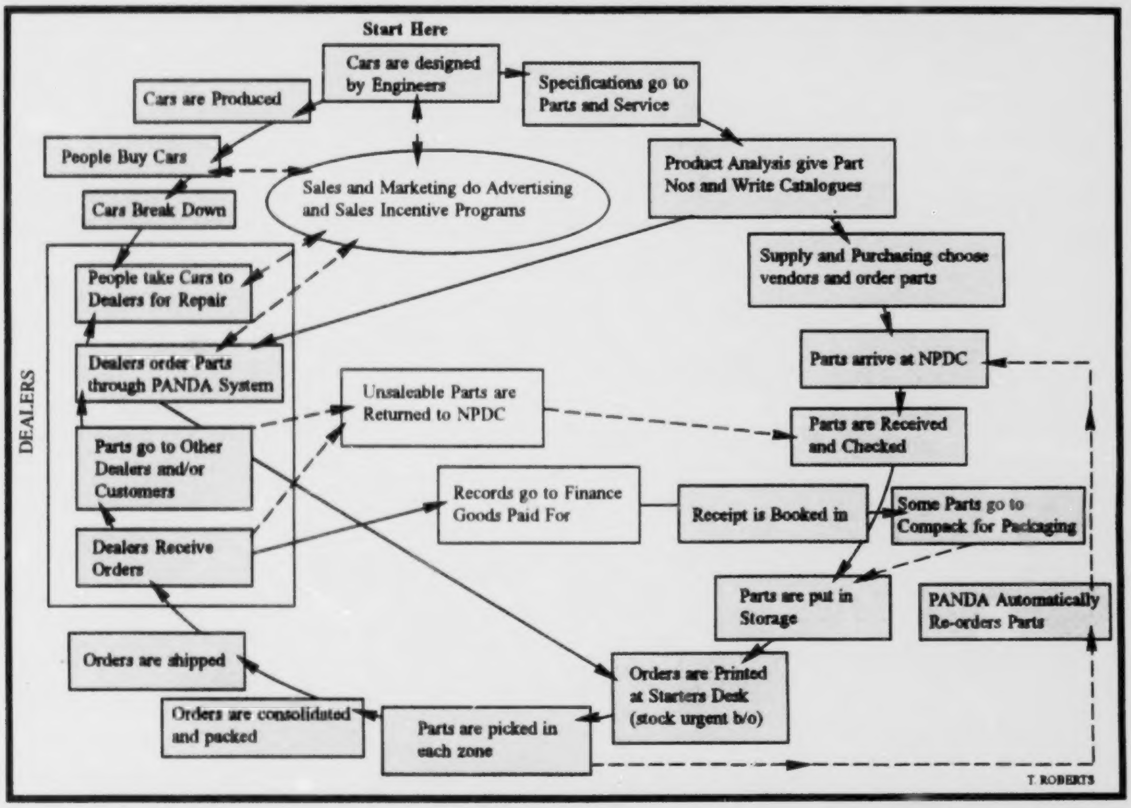
Throughout the elective the team maintained a strong emphasis on the relationships between the sections of the curriculum as well as the relationships between the different sections of the warehouse itself. As Toni Roberts explained,

> *When we talked with people about their jobs we had to keep reiterating; "we're looking at this whole*

section, not just your individual job". We've tried to maintain a holistic perspective all the way through - whereas the original blueprint from management and the syllabus was all about bits.

Stressing the connections, relationships and interdependencies within the warehouse system was a recurring task throughout the project. To help illustrate the connections and relationships the team developed a circular flow chart [See Figure 6]. This flowchart was designed to represent the process of supply of spare parts from beginning to end, incorporating sourcing and supplying the part to the warehouse, storage of parts and shipping to dealerships. At the same time, and going anti-clockwise, is the process of buying a car, and having it serviced and repaired. Sales and Marketing influence both sides of the process, by affecting sales through advertising to the public and dealerships, and by offering dealers sales incentives. Management and administrative departments are integrated with warehousing departments, as the focus is on the process of the parts, rather than demarcation of duties.

FIG 6 FLOW OF OPERATIONS


Start Here
Cars are designed by Engineers
Specifications go to Parts and Service
Cars are Produced
People Buy Cars
Product Analysis give Part Nos and Write Catalogues
Sales and Marketing do Advertising and Sales Incentive Programs
Cars Break Down
Supply and Purchasing choose vendors and order parts
People take Cars to Dealers for Repair
Parts arrive at NPDC
Dealers order Parts through PANDA System
DEALERS
Unsaleable Parts are Returned to NPDC
Parts are Received and Checked
Parts go to Other Dealers and/or Customers
Records go to Finance Goods Paid For
Receipt is Booked in
Some Parts go to Compack for Packaging
Dealers Receive Orders
Parts are put in Storage
PANDA Automatically Re-orders Parts
Orders are shipped
Orders are Printed at Starters Desk (stock urgent b/o)
Orders are consolidated and packed
Parts are picked in each zone
T. ROBERTS

This visual representation of the relationship between the main players in the process was used for a variety of teaching/learning purposes. The Ford Warehousing Elective directly follows the chart in a clockwise direction in its structure, beginning with Cataloguing and Supply, through to Shipping and Dealers. In particular, the flowchart became a useful visual tool which was used again at the end of the course as a model for mapping a process, and trainees were asked to map the flow of communication between all the players in the process.

BEST COPY AVAILABLE

The curriculum structure (see Table 5) created a logical flow through the content of the course and allowed for constant revision and reinforcement of material, as the movement of parts is tracked through the warehouse. For example, much of the paperwork produced in the Orders section is later used in Shipping to check and consolidate orders. Trainees could therefore see what had happened between those two points, and thereby understand the need for paperwork. Each topic began with a set of questions aimed at bringing out trainees' existing knowledge and stimulating thinking on the topic. These were generally followed with information and learning activities that usually included a visit to the relevant area. Research topics were set regularly throughout the course. Trainees were required to complete these in their own time and present written and oral reports on their findings.

Table 5 Curriculum Structure

Topic	Hours
Introduction	4
Receiving	16
Storage & Retrieval	22
Shipping	14
Overview	4
Total	60

Notes were also produced for the trainees. However, in most cases the notes were distributed to the class after substantial discussion and learning activities had taken place - the learning was not pre-packaged. Thus the trainees developed their own training packages as the program evolved. In this sense, if there was a package, it was an outcome rather than an input.

Ford trainers have also developed Job Certification Sheets (JCS's) for each job in the warehouse. These described the responsibilities of the job, the procedures to be followed, health and safety requirements, and the computer screens used in the process.

The JCS's are used in VIC skills training, and as a reference for all shop floor personnel. They are too detailed to be used in the elective but they provide excellent back-up information for trainers and reference materials for trainees in their research projects for this knowledge elective. Trainees are able to access the JCS's through their local VIC trainer.

Adjusting the Syllabus

The curriculum was designed using the VIC Warehousing elective syllabus. However the collaborative processes exposed the areas in which the general VIC syllabus needed to be adjusted. One of the first realisations, as the team became more familiar with the workplace requirements, was that the time allocated to cover warehousing would need to be increased. The syllabus document suggested 30 hours, but this was notional rather than prescriptive and experience in other companies suggested that 60 hours was more appropriate. It was therefore decided to develop the pilot program as a 60 hour elective. Table 6 lists the new topics which the team introduced as well as the existing topics which were dropped from the Ford NPDC outline.

Table 6 Topic Changes in VIC Syllabus

New Topics [1] (not in original syllabus)	**Irrelevant Topics (to Ford NPDC)** (in original syllabus)
Supply and Purchase Parts Numbering Cataloguing Receiving Stock Unpacking Re-packing/Kits Binning Systems Orders Replenishment Shipping Dealership visit Customer Queries/Problems Packaging Technology Sales and Marketing	Stock Count - inventory Stock Count - planning Stock Count - preparation Stock Counting Reconciliation Location Guide

[1] Accreditation documentation in competency format has been prepared for the Office of Training and Further Education under Principle 7 - Customisation.

Induction Program

Part of the brief for the pilot program was that the curriculum design should include an induction program for new warehouse employees. However rather than commence with the requirement for an induction program the team decided to develop the complete NPDC program and then consider which elements would need to be extrapolated to provide a coherent overview.

When the elective was completed the team identified the essential elements of warehousing and produced ten hours of training with new activities to cover these elements. Thus the Induction Program is separated from the elective. It incorporates key content from each of the five sections of the elective in addition to the new activities designed specifically for the induction program. At time of writing, the Induction Program had not been trialed.

8.6 Implementing the Pilot Program

The Participants

The pilot group of trainees was selected by the warehouse trainers, making sure that they represented a broad range of warehouse departments, and included both team leaders and team members. A key factor in the selection of trainees was that completing the Warehousing Elective would enable these employees to complete their knowledge units and thus their VIC, enabling them to graduate at the next available presentation.

Nevertheless, these employees were also considered to be representative of the warehouse workforce in terms of language and literacy skills. Although the majority of the participants were born in Australia most came from non-English speaking backgrounds and were bilingual, with some using their first language (other than English) for social and familial interaction. English written literacy was less well developed in some employees of both NESB and ESB backgrounds, however this did not prevent them from doing their work. This observation was expected, based on the results of the Work Placed Education Project[1] which included a sample of employees from warehousing across industry, including at the NPDC, Ford Broadmeadows. There were eleven employees in the group, nine male and two female. The following tables illustrate how the participants in the pilot program were broadly representative of the warehouse workforce.

Table 7 Warehouse Workforce

Warehouse Personnel	Male	Female
English Speaking Background	35%	8%
Non-English Speaking B'ground	54%	3%
TOTAL: 181 people	89%	11%

Table 8 Participants in Pilot Program

Participants in Pilot Program	Male	Female
English Speaking Background	37%	-
Non English Speaking B'ground	45%	18%
TOTAL: 11 people	82%	18%

The pilot was held in company time so that all participants were paid to attend. Each class was for three hours, held twice a week over ten weeks for the total of 60 hours. In all, only five trainees missed a class, in each case due to illness. These trainees made up for the lost classes with catch-up activities. Three trainees also had annual leave during this time, however they still attended classes.

Workplace Learning Activities

A range of workplace learning activities was designed and incorporated into the pilot program. As mentioned above, the activities were developed through collaborative processes to ensure relevance and feasibility. These activities included:

- group discussions,
- interviewing warehouse personnel,
- writing up reports,
- drawing graphs,
- flowcharts and diagrams, and
- going onto the shop floor in problem solving groups.

One of the key principles here was to have the learning active and experiential rather than passive and dependent upon rote learning or memory.

The following activities which were the review activities of Part 2 Receiving, have been included to show the kinds of activities trainees engaged in and how they responded. The trainees were broken into three groups and given an activity each to investigate. They then came back to the class and reported their findings.

Activity 1 Lost Stock

You know a part has been received, but can't find it. It hasn't been binned, so where it is?

Report on all the strategies you could use to find the part.
Include:
- documentation/information you might need;
- computer screens used;
- people/areas you might communicate with;
- areas you might visit

The group that worked on this task provided the class with a written report. The report first gives the topic, LOST STOCK, and identifies the four trainees involved in the activity. It describes the actions they took to solve the problem and names warehouse personnel they interviewed. Here is part of the report:

Problems could be:

- stock could still be on line not binned
- could still be in P.D. station
- could be binned but tag not purified
- could have gone to Compak
- could have gone to shed but tag not purified
- tag could go on wrong stock
- check all zones to make sure it is not in wrong zone (it can happen)

Screen X will tell you if the tag is active and which person did the job. So see him, [ask about] the stock, what area it is going to and location. Also tag No. ID and Quantity. Screen Y will give you on hand quantity. ... When talking to Frank we found out that a report comes out daily. It is called a "Non Validated Tag Report". Also that lost stock could be found over at Product Repair (Damaged) Inspection may have taken stock to check and not let anyone know.

So the report continues, handwritten and nearly two pages in length, it provides a comprehensive list of the possible answers to the riddle of missing stock.

This written report however was not the group's only response to this problem solving activity. They made a group presentation to the class. They also talked about their activity as well as leading the class to visit the areas of the warehouse where lost stock may accumulate and explained how this happens.

The second of the review activities on Receiving dealt with Master Labels.

Activity 2 Master Labels

What is the purpose of a master label? Where is it placed? Why?
Go to receiving and check the positioning of master labels. How many pallets don't have it in the correct position, or don't have one at all? What should a forklift driver do if he notices a problem with a master label in the wrong place? Should it be fixed when unloaded?

Answer these questions, then report on the positioning of master labels as the pallet moves through the warehouse: truck - forklift - FD station - forklift - storage.

Do you have any suggestions for improving the visibility of master labels?

The four trainees working on this activity also produced a written report and made a group presentation to the class. Here is an extract from their written report:

Our group (2) had the task of finding out what the purpose of Master Labels is in the receiving area. To gain further information on this task we went and interviewed Joe M. and other relevant people from receiving (local).
Our first question was to find out what is the purpose of a master label. We were told its purpose is to help identify the stock as well as to tell which supplier it is coming from. It also tells the forklift driver whether the stock goes onto the fast or slow moving roller, depending on whether it is mixed or not. It also enables checkers in the local receiving area to obtain the relevant paperwork without having to go to the team leader. In general, this system makes it easy for anyone to identify stock and where it came from.

However this group also adopted a different approach. They decided on the questions they would need to ask and found out with whom they would need to talk. They then made arrangements to videotape their interview with the relevant team leader. They made their video, recording the interview and showing the placement and purpose of the master labels. The video became a central feature of their presentation to the class.

The third Review activity for Receiving focused on the flow chart for Local Receiving.

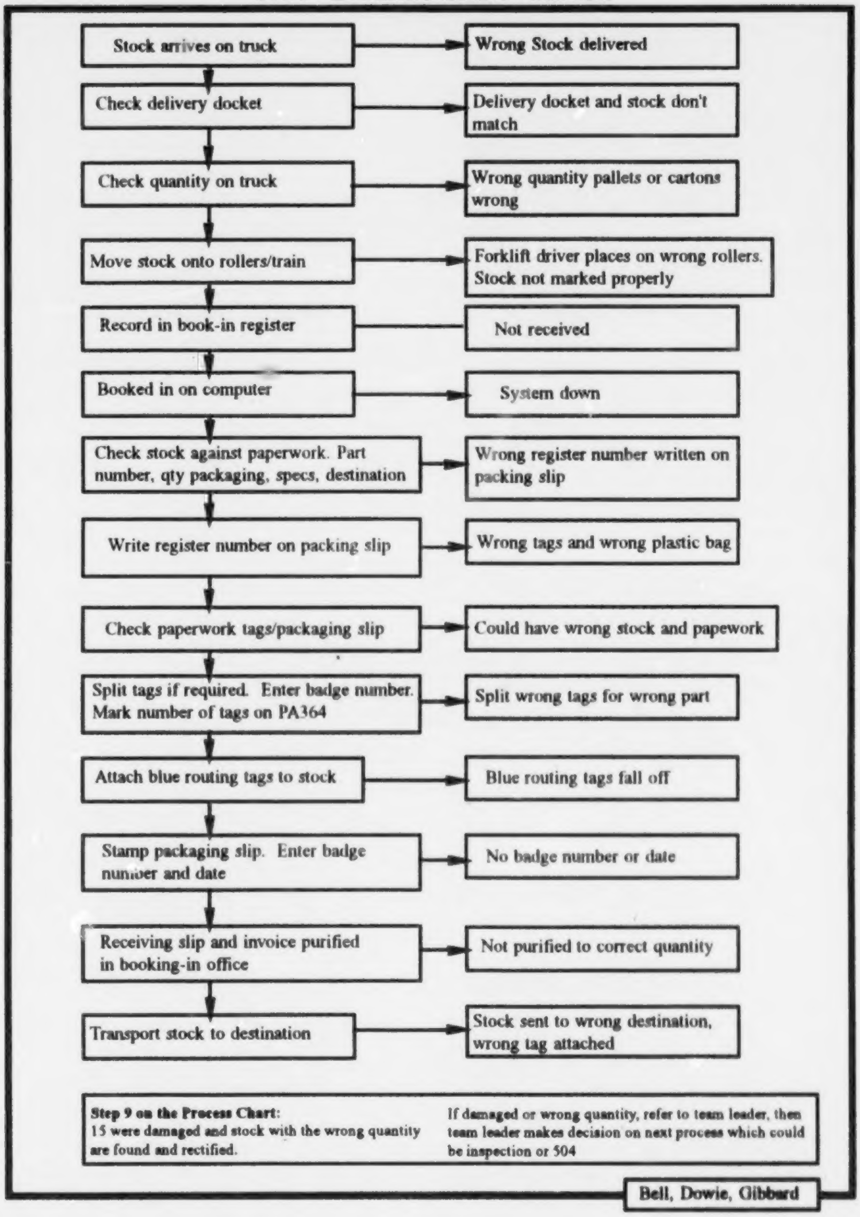
Activity 3 Problems

Look at the flow-chart for Local Receiving.
What can go wrong, or change, at each point in the process?
eg. What happens if a part arrives damaged or in the wrong quantity?
Where in the process does this happen?

You will need to go and talk to several people. Your report could include a revised flow-chart or diagram, as well as written information.

The group working on this activity re-made the flow chart to depict not only the stages in the process, but also the potential problems which could arise at each point. They made transparencies and presented their new flow chart as one of a series of overheads in their presentation to the group. The project team commented that the trainees' overhead projector transparencies and their presentation showed all the marks of a professional approach. Figure 7 shows the re-designed flow chart which the group produced. The boxes on the left were those included in the original; those down the right hand side show the potential problems identified by the group.

FIG 7 LOCAL RECEIVING - PROCESS


Stock arrives on truck
Wrong Stock delivered
Check delivery docket
Delivery docket and stock don't match
Check quantity on truck
Wrong quantity pallets or cartons wrong
Move stock onto rollers/train
Forklift driver places on wrong rollers. Stock not marked properly
Record in book-in register
Not received
Booked in on computer
System down
Check stock against paperwork. Part number, qty packaging, specs, destination
Wrong register number written on packing slip
Write register number on packing slip
Wrong tags and wrong plastic bag
Check paperwork tags/packaging slip
Could have wrong stock and papework
Split tags if required. Enter badge number. Mark number of tags on PA364
Split wrong tags for wrong part
Attach blue routing tags to stock
Blue routing tags fall off
Stamp packaging slip. Enter badge number and date
No badge number or date
Receiving slip and invoice purified in booking-in office
Not purified to correct quantity
Transport stock to destination
Stock sent to wrong destination, wrong tag attached

Step 9 on the Process Chart: 15 were damaged and stock with the wrong quantity are found and rectified.

If damaged or wrong quantity, refer to team leader, then team leader makes decision on next process which could be inspection or 504

Bell, Dowie, Gibbard

These and a range of other activities enabled a wide range of experiences and responses. As the groups presented their findings, interest levels and motivation for learning were sustained. At the conclusion of the elective the trainees were presented with a checklist which listed the activities they had successfully completed.

Language[2] Development in the Collaborative Curriculum process

By Phillipa Thomas-Walsh

The project team was aware that the language abilities of the warehouse employees were generally adequate for the particular work each was doing. This conclusion was reached through direct observation, consultation in the warehouse and in specific curriculum workshops and general interaction with a large cross section of the warehouse personnel. An absence of concern about specific language problems was also apparent from the project team's interaction with personnel at all levels, who indicated that;

- the current print system worked relatively well,
- employees understood and carried out their own jobs well.

The team observed that the operations of the warehouse relied upon,

- a predominately print system, (paper and computer screen), in which **all** operators are **active** participants and,
- an oral communication network operating parallel to the print system consisting of official/formal communication embroidered with a lingua franca, which is in some respects area specific.

Consultations revealed that most employees had some insight into other areas of the warehouse through VIC skills rotation, **but** not in-depth knowledge. However few, had an overview of the warehouse or the wider implications of customer requirements.

The project team saw the need to link the knowledge and skills that people had of their own jobs, to that required in other jobs, and to appreciate the overall operation and responsibilities of the warehouse. This would require quite significant extension and development of language skills, particularly those of analysis, synthesis and reflection using both oral and written mediums. This detailed insight into the existing and anticipated language requirements of work in the warehouse, and the range of skills and potential already evident was a key element in contributing to the design of the curriculum and learning experiences. Language, including literacy and numeracy, was an integral component of that design.

The employees participating in the program had already attended VIC core units (Knowledge) classes and needed to complete the elective to obtain their VIC. The project team spent considerable time in the first few sessions identifying the strengths and potential of the participants. This occurred informally through a range of activities designed to assist trainees to focus on their positive attributes, skills and prior experience. Through this process particular needs of individuals became apparent.

Strategies were devised to respond systematically to these particular needs. This process and the insights and information which emerged obviated the need for a traditional assessment of language and literacy levels.

Initially learning experiences concentrated on the development of analytical skills through extensive oral activities with minimal reading and writing requirements.

The Learning Outcome for the first part of the unit required the trainees to;

Summarise the functions of the warehouse, its principle operations and relationship to administration and other departments within the company structure.[3]

For the activity the trainees were required to fill in two Organisational Charts showing all the administrative departments of the Parts and Service Operations. These charts showed where warehouse operations fitted into the operating structure of Parts and Service Operations. The second part of the activity was for each trainee to interview a Senior Management Staff member and then report back to the class.

The trainees were required to:

* discuss and formulate suitable questions for interviewing
* conduct the interview according to company protocol
* give an oral report to the class regarding the roles of each department including the role of the department head, and
* make notes from the reports either on their own initiative, or copy the salient points from the white board.

This exercise provided a foundation for subsequent sections of the elective and a reference for trainees to use, when they focused on the administration departments.

The aim of this and subsequent activities was to develop skills that enabled trainees to:

- access information;
- organise their ideas;
- present their ideas in both written and oral form;
- critically reflect on their own reports and other material they encountered in both research for the class, and their daily work; and finally,
- to build competence and therefore confidence in their communication skills.

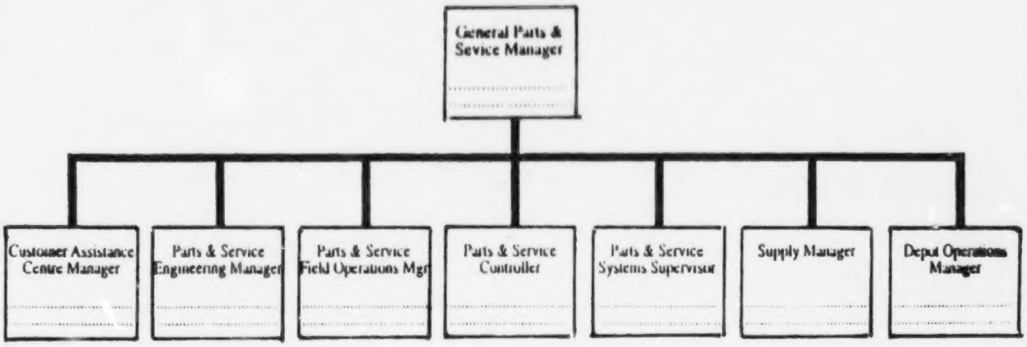
The three review activities discussed in the previous section, demonstrate how these skills were built upon with each subsequent activity. These review activities were done as group exercises. This enabled participants to negotiate which role they would undertake within the group, according to the skills they brought with them and what they felt comfortable doing.

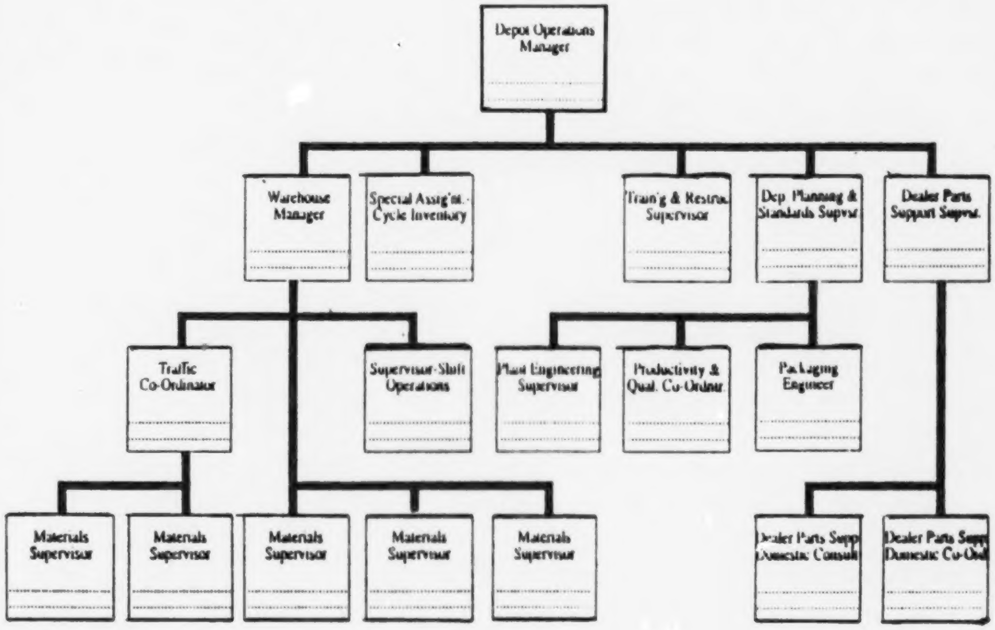
Activity 1.3

Parts and Service Operations and Depot Operations Organisation Charts

Fill in the Department Head's names.

Each trainee will interview a Department Head and report back to the class their findings.


General Parts & Sevice Manager
Customer Assistance Centre Manager
Parts & Service Engineering Manager
Parts & Service Field Operations Mgr
Parts & Service Controller
Parts & Service Systems Supervisor
Supply Manager
Depot Operations Manager


Depot Operations Manager
Warehouse Manager
Special Assig'nt. - Cycle Inventory
Tran'g & Restrn. Supervisor
Dep Planning & Standards Supvsr
Dealer Parts Support Supvsr.
Traffic Co-Ordinator
Supervisor-Shift Operations
Plant Engineering Supervisor
Productivity & Qual. Co-Ordntr
Packaging Engineer
Materials Supervisor
Materials Supervisor
Materials Supervisor
Materials Supervisor
Materials Supervisor
Dealer Parts Supp Domestic Consult
Dealer Parts Supp Domestic Co-Ord

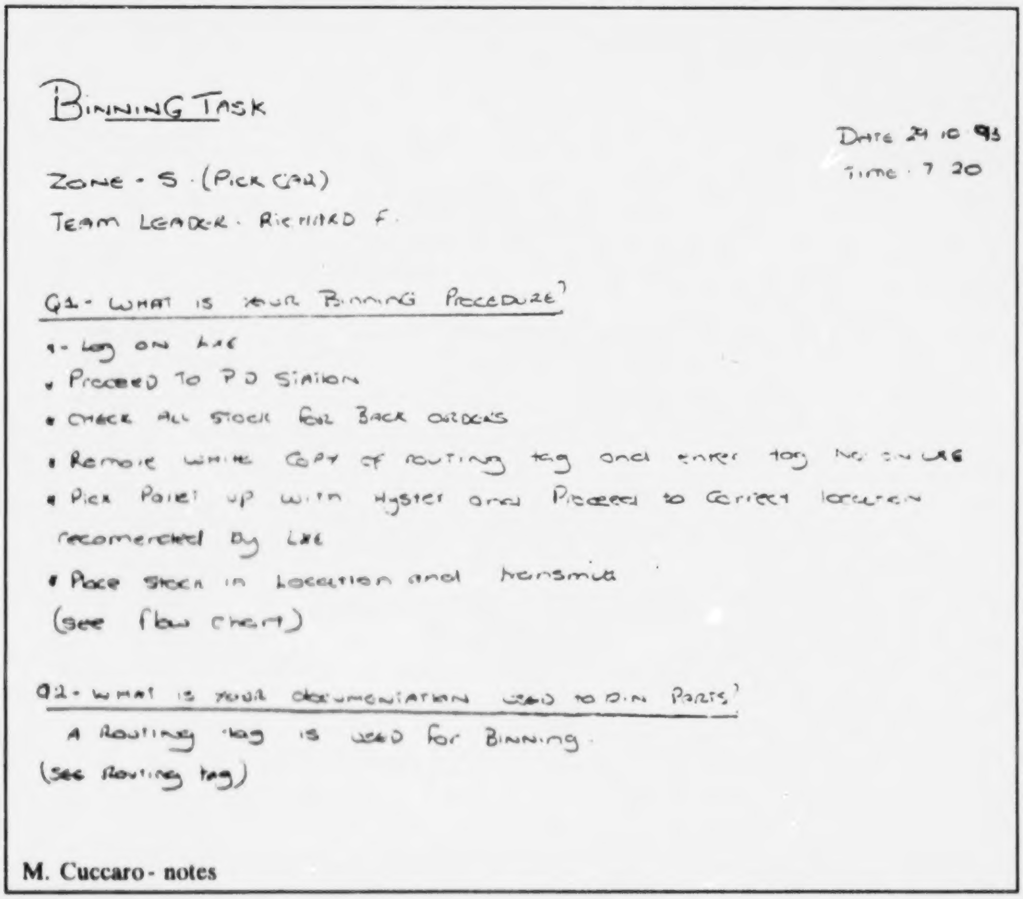
© FORD Australia

BEST COPY AVAILABLE

Throughout the course, time was spent with the trainees discussing how reports were to be presented, both orally and in writing. The expectation from the project team was that trainees would have their "comfort zones" challenged. Initial oral reports were given from their own chair, as the course progressed, trainees were asked to present from the front of the room. This same notion of challenging was also carried through into their written work. The project team raised their expectations of the format in which written reports would be presented.

The following two extracts are from Maria Cuccaro, a participant in the pilot program. The first is her Binning Task Report, which was an activity in Part 3 Storage and Retrieval, the second is her Dealership Visit report, which was the final piece of written work to be assessed.

In the Binning Task activity, trainees were given eleven questions to research about binning procedures in different areas of the warehouse. The trainees researched these questions and then wrote a report



BINNING TASK

DATE 24 10 93
TIME 7 20

ZONE - 5 (PICK CAR)
TEAM LEADER - RICHARD F.

Q1 - WHAT IS YOUR BINNING PROCEDURE?

1- Log on LXE
- Proceed to PD Station
- Check all stock for Back orders
- Remove white copy of routing tag and enter tag No. on LXE
- Pick Pallet up with Hyster and Proceed to Correct location recomended by LXE
- Place stock in location and transmit

(see flow chart)

Q2 - WHAT IS YOUR DOCUMENTATION USED TO BIN PARTS?

A Routing tag is used for Binning.
(see Routing tag)

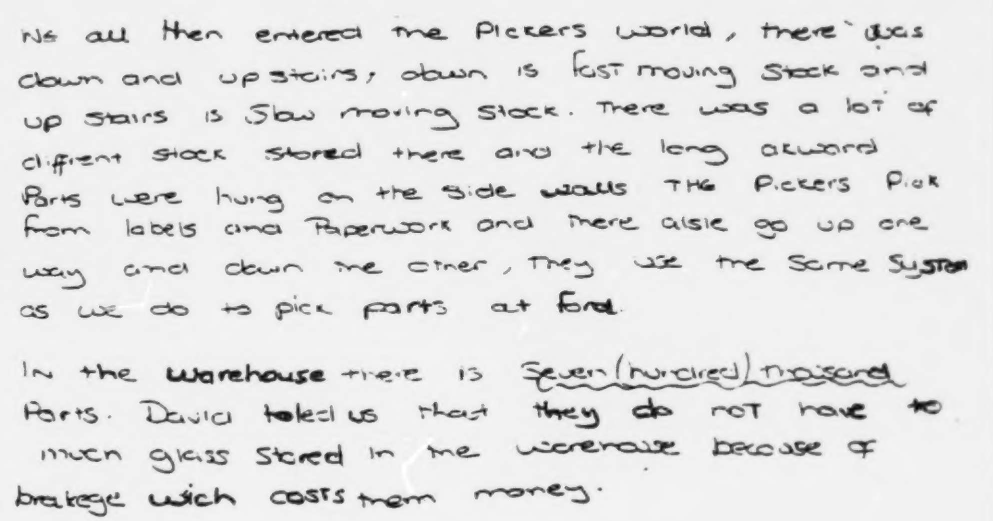
M. Cuccaro - notes

From this question/answer format, which provided the structure for the report, trainees were encouraged and guided towards constructing a more extended piece of work which

BEST COPY AVAILABLE

incorporated the conventions of report writing. The project team discussed in class, the list of qualities that a report should have, these included; introductions and conclusions, factual information, data, paragraphing through logical sequencing of ideas and incorporating questions into the text. They then modelled this on the whiteboard with the class. The concepts of brainstorming and mind mapping, which had been looked at previously, were also discussed in the context of report writing.

The following is a section from Maria's Dealership Visit Report. Note now that the structure is that of a narrative style report. Maria and other trainees devised their own structure through choosing the order in which they presented the information, this gave them greater autonomy over their presentation, than the previous reports in which structure was implied through the question/answer format.



We all then entered the Pickers world, there was down and up stairs, down is fast moving Stock and up stairs is Slow moving stock. There was a lot of diffrent stock stored there and the long akward Parts were hung on the side walls THE Pickers Pick from labels and Paperwork and there alsle go up one way and down the other, They use the Same System as we do to pick parts at ford.

In the warehouse there is Seven (hundred) thousand Parts. David toled us that they do not have to much glass Stored in the warehouse because of brakege wich costs them money.

M. Cuccaro - notes

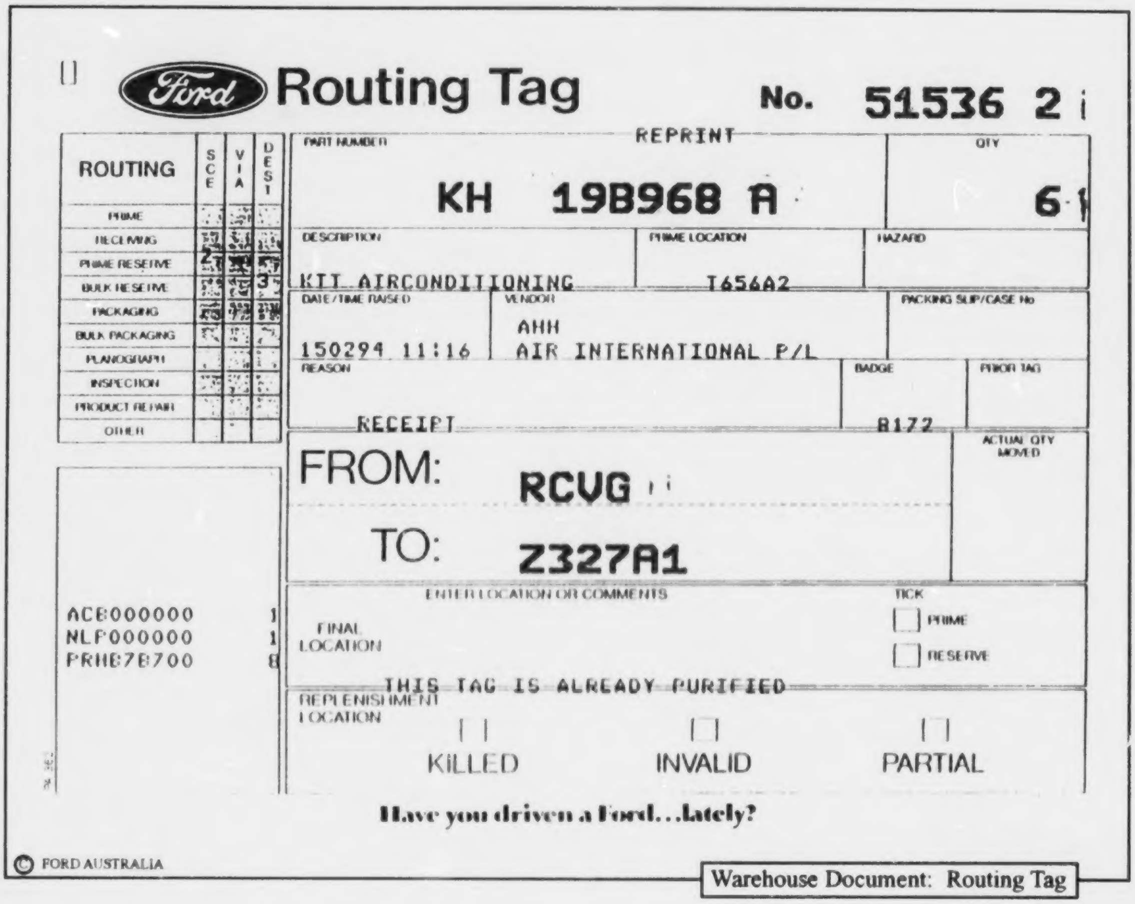
Valuing Shopfloor Language

The Project Brief required that the shop floor language and technology be an integral part of the elective. This meant that the "lingua franca" of the warehouse had to be included in the curriculum. Both the official warehouse language and the colloquial descriptive terminology needed to be used and cross referenced to each other.

There was numerous evidence of this warehouse specific semantics. For example, all the employees in non-dynamic zones, when binning (putting away), stock talk about "killing the tag". (The Routing Tag is the document used to move stock through the warehouse to its storage location). Killing the tag here, means that the location of the stock listed on the tag is no longer correct and therefore a new tag with the new

BEST COPY AVAILABLE

location must be made. However, in dynamic areas, employees when picking stock, "kill the location", when it is empty, so that it becomes available on the system for future stock allocation. The project team had to incorporate these semantic definitions into their understanding of "kill".



☐ **Ford Routing Tag** **No. 51536 2**

REPRINT

ROUTING	SCE	VIA	DEST
PRIME			
RECEIVING			
PRIME RESERVE	2		
BULK RESERVE			3
PACKAGING			
BULK PACKAGING			
PLANOGRAPH			
INSPECTION			
PRODUCT REPAIR			
OTHER			

PART NUMBER: KH 19B968 A
QTY: 6
DESCRIPTION: KIT AIRCONDITIONING
PRIME LOCATION: I656A2
HAZARD:
DATE/TIME RAISED: 150294 11:16
VENDOR: AHH AIR INTERNATIONAL P/L
PACKING SLIP/CASE No:
REASON: RECEIPT
BADGE: 8172
PRIOR TAG:
FROM: RCVG
TO: Z327A1
ACTUAL QTY MOVED:

ACB000000 1
NLF000000 1
PRHB7B700 8

FINAL LOCATION
ENTER LOCATION OR COMMENTS
TICK
☐ PRIME
☐ RESERVE

THIS TAG IS ALREADY PURIFIED

REPLENISHMENT LOCATION
☐ KILLED ☐ INVALID ☐ PARTIAL

Have you driven a Ford...lately?

© FORD AUSTRALIA

Warehouse Document: Routing Tag

Another example was highlighted when trainees was asked to investigate the binning process in a zone. Employees were told to go to "S Zone", they asked where this was. It became apparent, that everyone in the warehouse called this particular section "pick car", rather than its alphabetical designation.

It was through these and other examples, that the accurate language picture of the warehouse became apparent to the project team and without this exact description, the elective that was created, would not have been specific to the Ford NPDC.

Numeracy Development

Many aspects of the warehouse daily work practices rely on employees having an understanding of mathematical concepts, such as volume, mass, graph production and analysis. It became evident that there had to be a component in the elective which would focus on this aspect of workplace practice.

Throughout the elective, trainees were exposed to the mathematics of a the particular areas of the warehouse. There was a lot of work done in class activities, explaining how to interpret graphs. Some examples from *Numeracy on the Line* (Marr, Anderson and Tout 1994) were used in the elective to introduce graph reading and concepts such as " x and y axis" to the trainees. The first graph production was modelled in class and then draft copies of the trainees' graphs were submitted. Then trainees were given individual assistance with any problems they encountered, in order to build on their understanding of graphs.

Within the warehouse, mass and cubic measurements, play an important role in many operations. The storage, packing and distribution of stock, all are underpinned by an understanding of cubage. In Part 3 Storage and Retrieval, a practical activity was designed to increase trainees awareness of the size and quantity of a cubic metre, through making a cubic metre in the class with 1m sticks. This was then followed by trainees actually estimating the mass of items of stock and then measuring them to see how correct they were. This knowledge was then used to underpin the processes of picking, packing and distribution of stock to the dealerships.

The project team were aware that with changes in work practices, aimed at moving to Q1 status, all teams in the warehouse were to become responsible for the production of their own area statistics and graphs, therefore the development of mathematical concepts had an ongoing function in the warehouse.

Conclusion of Language Section

The project team had to be aware of all these contributing factors; development of language and mathematical skills, valuing the shopfloor language, encouraging critical reflection and building communicative competence in the trainees; in order to produce a truly intergrated curriculum document.

The final workplace example has been included to highlight how numeracy and literacy are often combined in workplace documents, and that in order to be able to read them, in context, the employee needs a knowledge of technical language and numeracy.

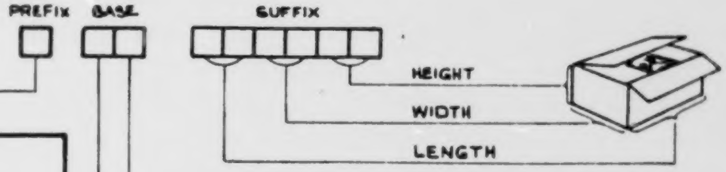
Ford of Australia
National Parts Distribution Centre

PACKAGING SPECIFICATION

Part
NPU
Ref number

Page 1 of 2

PACKAGING MATERIAL CODE



APPLICATION

A	ACCESSORIES
D	WARNING SYMBOLS
F	FORD SERVICE PARTS
M	MOTORCRAFT
N	NEUTRAL (PLAIN)
C	PALLET (STD. BOX)
P	PALLETS
W	PACKAGING AIDS

STYLE

A	BAG CORDED
B	BAG NON CORDED
C	CARTON, BOX, CASE, CONTAINER
K	CARTON, BOX BLOCK BOTTOMED
Q	CARTON, BOX, CASE CONTAINER SPECIAL CONS'T
G	CRATE
D	FOLDER COATED
E	ENVELOPE
F	FOLDER - STD
P	FILM
H	HOSE
I	INSERT, FITTING
J	LID
L	LABEL, TAG
R	RIBBON, TAPE, STRAP
S	SLEEVE
T	TUBE
W	WRAPPER
V	FASTENERS
X	SHRINK PACK
Y	SKIN PACK
Z	BLISTER PACK
O	OTHERS

CHARACTERISTICS

	MATERIAL	FLAPS	WALL
B	CORRUGATED	MEETING	SINGLE
C	CORRUGATED	MEETING	DOUBLE
D	CORRUGATED	MEETING	TRIPPLE
L	CORRUGATED	OVERLAPPING	SINGLE
M	CORRUGATED	OVERLAPPING	DOUBLE
N	CORRUGATED	OVERLAPPING	TRIPPLE
U	CORRUGATED	TUCK	SINGLE
V	CORRUGATED	TUCK	DOUBLE
W	CORRUGATED	TUCK	TRIPPLE
Q	CORRUGATED	PLAIN	
R	SOLID BOARD	TUCK	
S	SOLID BOARD	MEETING	
X	SOLID BOARD	OVERLAPPING	
K	SOLID BOARD	PLAIN	
J	SOLID BOARD	NIL	

OTHERS

E	EXPANDED POLY-STYRENE
F	EXPANDED POLYURETHANE FOAM
G	PLYWOOD
H	SOFT WOOD
I	METAL
P	PAPER
Y	POLYETHYLENE OR POLYVINYLCHLORIDE
O	OTHER

DIMENSIONS:
REFER PAGE 2 FOR DETAILS

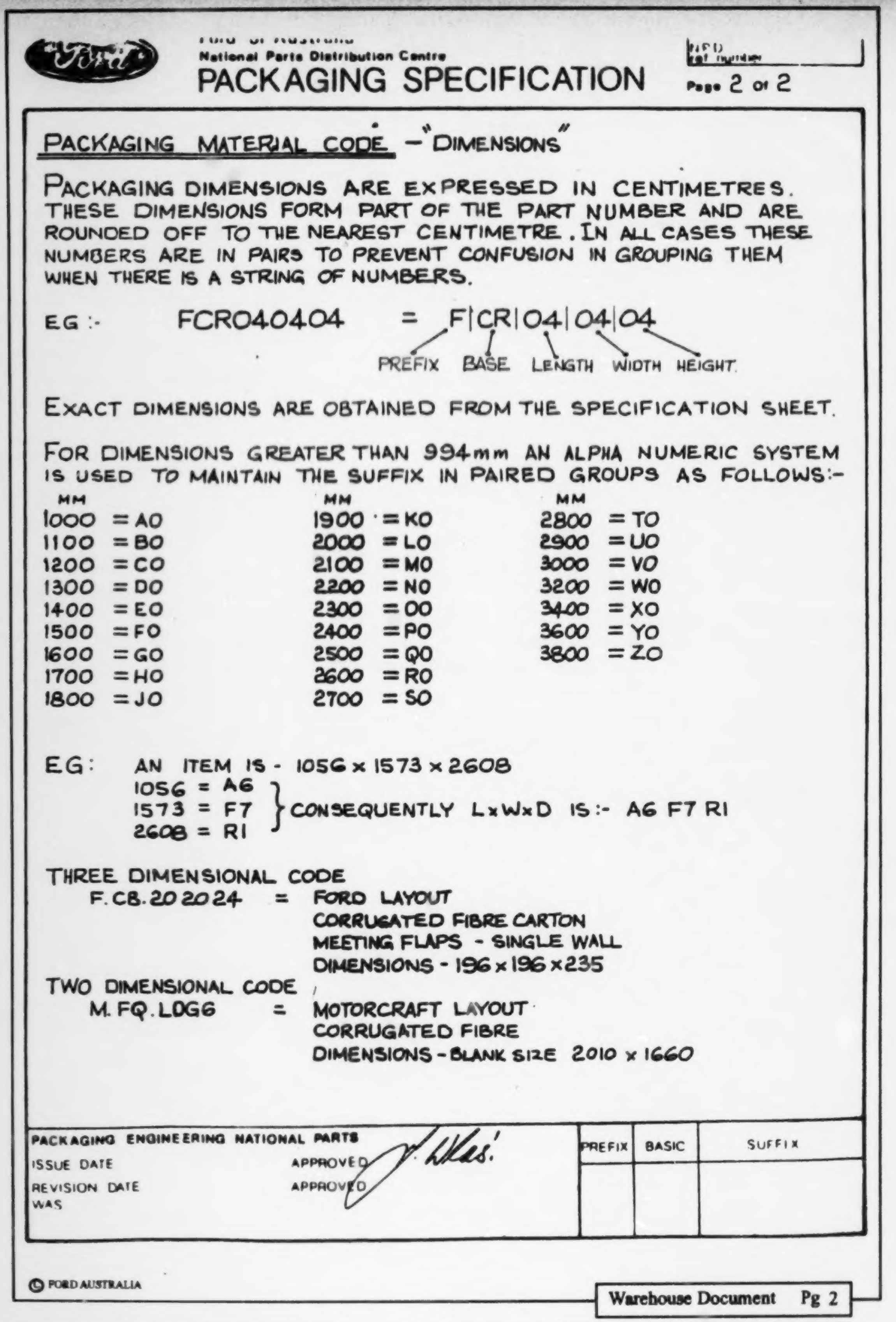
PACKAGING ENGINEERING NATIONAL PARTS
ISSUE DATE APPROVED
REVISION DATE APPROVED
WAS

PREFIX	BASIC	SUFFIX

© FORD AUSTRALIA

Warehouse Document Pg 1

BEST COPY AVAILABLE



Ford of Australia
National Parts Distribution Centre

PACKAGING SPECIFICATION

NPD
Ref number

Page 2 of 2

PACKAGING MATERIAL CODE – "DIMENSIONS"

PACKAGING DIMENSIONS ARE EXPRESSED IN CENTIMETRES. THESE DIMENSIONS FORM PART OF THE PART NUMBER AND ARE ROUNDED OFF TO THE NEAREST CENTIMETRE. IN ALL CASES THESE NUMBERS ARE IN PAIRS TO PREVENT CONFUSION IN GROUPING THEM WHEN THERE IS A STRING OF NUMBERS.

EG :- FCR040404 = F|CR|04|04|04

PREFIX BASE LENGTH WIDTH HEIGHT

EXACT DIMENSIONS ARE OBTAINED FROM THE SPECIFICATION SHEET.

FOR DIMENSIONS GREATER THAN 994mm AN ALPHA NUMERIC SYSTEM IS USED TO MAINTAIN THE SUFFIX IN PAIRED GROUPS AS FOLLOWS:-

MM
1000 = AO
1100 = BO
1200 = CO
1300 = DO
1400 = EO
1500 = FO
1600 = GO
1700 = HO
1800 = JO

MM
1900 = KO
2000 = LO
2100 = MO
2200 = NO
2300 = OO
2400 = PO
2500 = QO
2600 = RO
2700 = SO

MM
2800 = TO
2900 = UO
3000 = VO
3200 = WO
3400 = XO
3600 = YO
3800 = ZO

EG: AN ITEM IS - 1056 × 1573 × 2608
1056 = A6
1573 = F7
2608 = R1
} CONSEQUENTLY L×W×D IS :- A6 F7 R1

THREE DIMENSIONAL CODE
F.CB.20 20 24 = FORD LAYOUT
CORRUGATED FIBRE CARTON
MEETING FLAPS - SINGLE WALL
DIMENSIONS - 196 × 196 × 235

TWO DIMENSIONAL CODE
M.FQ.LOG6 = MOTORCRAFT LAYOUT
CORRUGATED FIBRE
DIMENSIONS - BLANK SIZE 2010 × 1660

PACKAGING ENGINEERING NATIONAL PARTS
ISSUE DATE
APPROVED
REVISION DATE
APPROVED
WAS

PREFIX	BASIC	SUFFIX

© FORD AUSTRALIA

Warehouse Document Pg 2

Assessment Practices

The aims of the NPDC Warehousing program were diverse in terms of learning outcomes and varied according to the trainees. The program was intended as a means of facilitating change and improvement within the workplace through promoting employees' involvement in, and understanding of, their workplace. The assessment of the elective needed to be in tune with this overall objective. Most other VIC training at NPDC had been assessed using traditional format summative tests. Whilst there were some moves to broaden assessment practices many NPDC employees became used to holding the information covered for long enough to pass the required test, and then forgetting all about it.

This elective, by contrast, was a 60 hour program which required trainees to hold onto information and revisit and relate topics covered. The intention was for trainees to:

* develop and demonstrate an understanding of warehouse procedures;
* connect/relate all departments and warehouse functions;
* see the NPD in the context of Ford and the automotive industry (nationally and globally).

To determine whether these aims were being met, the project team focused their assessment upon the trainees:

* completion of various class and sub group activities;
* completion of individual, pair and group research activities;
* presentations and reports of findings; and,
* maintenance of notes on class discussions.

Researching topics and presenting information to the class, both orally and through writing and other media was, as well as being a method of assessment, also used to develop trainees' communication, teamwork, literacy and mathematics skills. It was also stimulating for the class to have material presented by a range of people, rather than just the trainer. In this way the assessment tasks, rather than being just what happens at the end of the unit, became integral to the teaching and learning of the whole program. This approach is consistent with the notion that assessment should be about monitoring change and finding ways to improve.

Throughout the program trainees were made aware of the expectations. The collaborative curriculum development processes involved work-group leaders as well as shop floor workers and management representatives in determining learning activities and assessment criteria. At the completion of the program the trainees were given a checklist (see next page) which identified the activities on which they had been satisfactorily assessed.

FORD NPD VIC WAREHOUSING ELECTIVE
STUDENT ASSESSMENT CHECKLIST

NAME:____________________________

This student has attended_____hours of classes.

This student has completed_____hours of catch-up for classes missed. **Total_____hours.**

This student has participated in and successfully completed all in-class activities, as well as visiting the relevant areas of the warehouse. These activities included:

- map labelling
- construction of a time-line
- part numbering activity
- graph reading
- group discussion
- matching receiving paperwork
- ordering flow-chart
- identifying documentation
- visit to a dealership
- mapping bin locations
- constructing a communication model
- binning problem solving
- metric activities
- calculating cubage
- identifying load capacities
- analysis of tables
- constructing a flow chart
- identifying packaging
- specifications
- development of group consensus

This student has successfully completed the following tasks outside of class time:

Part 1 Introduction.	
1. Interview with Senior Staff.	individual task; oral presentation
Part 2 Receiving	
1. Bar Graph	individual task; written presentation
2. Receiving Task	pair task; oral presentation; written presentation
3. Review Activity	group task 3 or 4; oral presentation; written presentation
Part 3. Storage and Retrieval	
1. Binning Task	individual task; oral presentation; written presentation
2. Run Chart	individual task; written presentation
3. Picking Variations Activity	pair task; oral presentation; written presentation
Part 4. Shipping	
1. Shipping Activity	pair task; oral presentation; written presentation
2. Dealer Visit Report	individual task; written presentation
Part 5. Review	
1. Workbook Notes	individual task; written presentation

Trainer Signatures:

Phillipa Thomas-Walsh Date

Toni Roberts Date

Trainers' Development, Notes and Workshops

As explained earlier, the structure of the VIC at Ford creates a crucial distinction between the on-the-job skills and the knowledge units taught off-the-job.

One of the aims of the integrated model was to re-unite the skills and knowledge components. This approach places new demands upon the trainers facilitating the program. Hence one of the tasks of the NPDC project was to provide support for the VIC Trainers who would conduct the integrated warehouse training once the pilot project concluded.

Therefore the project team not only targeted the participants in the pilot program, for language development, but the VIC trainers also. The project team were situated in the training centre working in close collaboration with the trainers. The team included the trainers in the Curriculum Workshops and checked the curriculum material gathered from the worksite with them.

The VIC knowledge trainer at NPDC, Barry Bell, was included as one of the participants in the pilot program. This enabled him to:

- observe both the project team's teaching strategies, and the trainee's language development through oral and written activities which were designed to challenge and extend the trainees communication competences;
- build on his facilitation skills, including effective listening, sorting and analysing information, and scribing onto the whiteboard from class discussions;
- observe and extend his understanding of peer learning techniques;
- extend his reflective and analytical thinking skills;

This was consistent with the overall aim of the NALLCU to assist the industry in developing its own strategies and people to more effectively meet the diverse training and learning needs of its non-trades workforce.

Whilst the NPDC Trainers have developed considerable skill and confidence in on-the-job skills training, many are less self assured about their abilities and prospects as classroom/knowledge trainers.

For this reason the project team developed Trainers' Notes as well as the curriculum materials prepared for the trainees. The introduction to the Trainers' Notes provides an overview of their aim and content.

TRAINERS' NOTES
VIC WAREHOUSING ELECTIVE FORD NPDC

These notes aim to give you, the Trainer, an understanding of the methodology employed in designing this elective, and assist you in using it as a teaching tool. This is not a step-by-step instruction manual on what to do in each class. It is a description of the aims of each topic in the elective, and some ideas on how to use the materials. It is important to remember that this elective must reflect the current practices of this warehouse and that the course will need to be updated as practices change.

Each trainer also has their own style of teaching, and the course can be supplemented with other activities and information as required.

Trainers notes include:

- Contents of the Trainees' work folder
- Contents of the Trainer's folder
- Aims of the course
- What is learning?
- Teaching strategies
- Assessment
- Identifying change in trainees
- Outcomes
- Course timeline
- Training notes for the elective

A series of professional development workshops was also planned for the warehouse training staff. The aims of the workshops were to:

- develop skills and confidence;
- share knowledge and experience;
- answer queries about their work;
- promote careful and critical thinking about learning and training.

These workshops were conducted following the pilot program. Responses to the workshops from the trainers and the warehouse training manager were very positive. It is anticipated that NALLCU will be involved in further on-going training initiatives and support activities with trainers.

8.7 Observations and Reflections by Peter Waterhouse

The intention of the project was to provide a strategy for developing integrated accredited training to act as a catalyst for workplace change. In order to achieve this goal, the training outcomes needed to be supported on the shop floor and at all levels of management. Therefore the collaborative process of curriculum development was based on the principle of promoting a high level of involvement in, and local ownership of, both the content and the outcomes of the training. In this regard, if the program is to be considered successful, these feelings of ownership should be reflected in comments from participants, managers and other company personnel.

It should be noted that any research based upon interviews and participant observation always entails the possibility that people will say what they believe is expected. This may, or may not, have been a factor in the comments on this program. Also, this was the first time VIC training had been designed and developed specifically for, and with, the NPDC employees. This undoubtedly influenced their perception and their comments on the program. The following section should be read with these factors in mind.

Interviews were conducted, by Peter Waterhouse, with all the stakeholders, including the project officers, offering different perspectives on the project. The following observations and reflections on the project were written by Peter, based on the themes that emerged from the interviews.

Employees and Management Owning the Curriculum

The collaborative processes of curriculum development appear to have resulted in a high degree of ownership of the curriculum by the enterprise participants. This came through particularly strongly in comments from Barry Bell, VIC trainer:

> *I don't want anyone else to get their hands on it and start revamping it. I don't want to see it changed because it's worked so well.*

This expression of ownership was also reflected in comments from Len De Kauwe, Senior Shop Steward at NPDC. Len contrasted the pilot program with older approaches to teaching.

> *... in the older way of teaching, where "This is the way we do it, and this is how we have to do it ... a top-down system you don't see nothing, you don't even see change in people. I think actually you see the reverse, you see the adverse reaction in people, you know, "Here we go again."*

Len said that from the union perspective, one of the most important factors in the pilot program was the involvement of shop floor people. This involvement leads to an exchange of information which places the trainer and the trainees on an equal footing.

> *... what is most important is that they see that they are part of it. That's the most important thing ... for sure, they're involved in doing all the graphs, the whatevers, because its coming from within, its coming from down-up, and you know they are contributing. They feel they are contributing and their suggestions or their ideas are accepted. So it's a two way learning process, not just one way, that's obvious. So that's what I've seen through this.*

Comments from Brian Whitcher, Manager of the Warehouse, also suggested his commitment to the curriculum. His key word was relevance. He stressed the importance of the curriculum being dovetailed with the operations of the warehouse:

> *... I think relevance is the key thing, that and the participants, the supervision, everybody in the place recognises that at last we are doing something that is relevant to the business of warehousing. In the past all the VIC knowledge units have been tailored around manufacturing motor cars. That's the business we're in, but unfortunately we don't have a great deal to do with the manufacture of motor cars. ... but this is very relevant and we've had the opportunity to be involved in the process.*

The Curriculum Development Process

One of the most important factors contributing to the sense of ownership was the collaborative process through which it was developed. In commenting on this process Brian Whitcher highlighted the way it stimulated his own thinking about the warehouse operations.

... the strange thing that I found out about this is, that I had to start thinking about what we did, to be able to tell Phillipa and Toni, and I sat down ... and I thought; "What am I going to tell these people:" You know? "What does happen in Binning? And I really had to start thinking about what we wanted them to come up with. So it's a bit of a challenge.

Whilst Brian felt the process involved some challenge, he also found this helpful. He felt that one of the benefits of the process was the way people were involved.

... we've had the opportunity to be involved in the process. I mean having quite a lot of input in the detail. ... it's something that we've always wanted, to be able to have people trained in the expertise of warehousing.

Len De Kauwe was also asked to comment on the work done by the project team in developing the curriculum.

Well, they've done an excellent job really, ... they spent a lot of time on the shop floor at the start, getting the facts. They were hands on. They spend a lot of time in each department finding out how the place ticks, the processes, following through each areas' different needs. ... They've done a lot of homework in other words, [pause]... *and all the comments, are like "things like this should've been done years ago."*

Bill Dowie, a shop floor worker and subsequent trainee in the pilot program, commented on his role in providing information to the curriculum writers.

Well she came up and she asked me. "What is this? And what is that? And how does the computer work? And which screens do you go through?" and all that. Me and Dennis gave her the run through and everything, yeah, filled her in on my job and my duties and that, yeah. ... That was fine, no problem.

When reflecting on the curriculum development process, Phillipa Thomas-Walsh recalled an incident which gives an insight into the process and reveals how shop floor employees perceived the process of curriculum development. The following account is an excerpt from Phillipa's journal.

> I was in R/T Zone desk and talking to Dennis. Bill was standing there. He asked who I was and what I was doing there. I told him about NALLCU and the VIC elective and what it means. Bill listened and then said, "Yes, but what are you doing here?". I explained again, only to get the same response, "But what are you doing here, in the warehouse?" I explained why we were actually on the shop floor to write the curriculum ... After some time he seemed to believe and accept what I was saying. He became excited at the prospect of participating in the pilot program. He needed to get six credits.

Enthusiasm, Learning & Commitment

Brian Whitcher commented on the level of enthusiasm demonstrated by the participants in the pilot program.

> *... the good thing, I think, the proof of the pudding, is people come out of it talking about it in a positive manner, rather than "Oh this bloody VIC, it's not relevant to us" ... I haven't spoken to all the people that are in it but I've spoken to the majority of them and they all seem to have the same opinion "Yes, it's good." "This is going to be good." You know and they look forward to going to classes.*

Brian commented further that some training programs had failed to excite the interest of the shop floor personnel. Managers and Training Officers sometimes needed to search out employees who were supposed to be attending training sessions. This was not the case with the pilot program. When asked about the difference Brian responded;

> *Because I think they are learning something and when you're really learning something you enjoy it. I think that's the key to it. If you're enjoying doing something; it's like when you're outside playing sport, if you're enjoying it you go, you go to training. But if you're not enjoying the game you just don't turn up for training. That's the sort of thing I sort of relate it to.*

The issue of participation and enthusiasm was also raised by Len De Kauwe.

> *The difference is the commitment from NALLCU itself and the actual commitment from my own members. I mean some of them were actually on holidays and they still came for classes. I mean that's a hell of a lot. If they were doing just the same old VIC thing, it's hard to just get them for the two hour class let alone coming for six hours in their holidays* [laughing]

As a Knowledge Trainer, well used to VIC classes, Barry Bell was also struck by the level of involvement and enthusiasm from the participants. He suggests that one of the reasons for this was the relevance of the curriculum which connected directly with the NPDC operations.

> *But this is more important to them because they're seeing something about their own area, they're relating to it a lot better. Even areas that they may have not worked in, or may have worked in and moved on, they're going back and finding out. They are doing the activities very eagerly. You know I've noticed that, compared with some of the activity I've asked people at NPD to do in other units, which might be writing a very small report about something - and they come back with excuses, that they couldn't find the person or they didn't know anything about it and they weren't too enthused. But this, they're going out and getting video cameras an' you know they are really getting stuck right into it. They're bringing examples in and everything because they can get their hands on it, it's really there. They're only too keen to show you and tell you their expertise.*

Later on Barry noted;

> *... well I feel more enthusiastic about this than I do about the other ones because at least you can see people getting something out of it. And they see it very seriously. The attitude of people has been, "Gee I've got to go to class today,"* [smiling] *not you know, "Oh heck."* [shoulders slumped]. *The enthusiasm level of the class is terrific.*

Barry felt that one of the key reasons for the enthusiasm was the relevance of the curriculum.

Yeah, I think it's worked very very well because it's all fact. And it's current. It's not something that's been dug out of the archives or records ... This is all current, and people when they hear it or see it they recognise it too as being current. The people themselves have contributed to the writing of it.

Bill Dowie a participant in the pilot program also noted the issue of relevance.

The hands on experience, like in the training, that's quite good. There should be more of that I reckon. ... [the elective] *is different because it relates directly to us, and its not something else about Plant 1 which we don't really need to know.*

Bill stressed the issue of relevance, the elective was, in his words, *"more straight forward, straight to the point, none of this around the sides sort of thing"*. During the interviews it almost seemed that the theme of relevance was like an echo ringing around the warehouse. Robert Petrocchi, another of the program participants commented:

... like I said before, it has to be relevant. I mean it's not much good if you're training for a position which you're never gonna be used for..... my earlier training was more or less something out of another department which was totally irrelevant to where I was working. ... [but] *this elective helped, it was more relevant and more educational. It was a lot better. So I could relate easier. More than the other classes.*

The final comment in this section is left to Brian Whitcher who stressed the importance of the training promoting effective learning. He drew a distinction between learning and training;

Yeah, I think probably the biggest thing for me is that it's simple and very easily understood. I've been to many many training courses over the years, ... and they become very difficult to understand, they're boring, a lot of them were non participative. That's the change I see. People can have a hands on sort of approach with the learning. It's learning really, instead of training. I hate the word training. Learning really as far as I'm concerned, that's what it's all about. You train animals I think. [laughs].

A little later in our interview Brian elaborated on the theme of learning.

We really did set out with that in mind, when it was first talked about, that we'd be able to get involved in setting the elective unit up. We really wanted to make it a learning experience, rather than just a training program. That was our idea; that it would be something that you'd be able to use for many years rather than a training course that would only support two or three years and then would be irrelevant and you'd have to start again. We wanted something you could actually build on, and add to, and change.

Evidence of Change

A 60 hour program may be too short a time to expect substantial workplace changes. However it seems there is evidence to suggest that change is beginning to impact on the shop floor. Consider the following comments from one of the non-English speaking background (NESB) participants in the pilot program:

It's helped me a lot because before I never. Just I work. I never ask anything about anything. But now I know the systems and everything ... now I move around everywhere. F zone, E zone, ... Now I want to know everything. You know I went and asked why they put the parts like this, why that. You know. Before I never. Always I keep my mouth shut.

The changes being described here are significant; for the workplace, and for the individual. Her spoken English is still developing, but she now has the confidence to use it, and in doing so her command of spoken English will continue to be extended. The training is enhancing her self esteem and her sense of autonomy and control. She took pride in describing the changes in herself and her increasing confidence in the workplace.

Before I really shy to go and talk to the depot man and the general foreman. Now I got a bit confident and talk to them. Find out my problems and solve them.

A recurring theme in the interview data was the sense of trainees developing an understanding of the bigger picture. Typically participants said that they understood their own job even before the program. But after the program they were able to make comments such as Robert Petrocchi's below:

... overall I've got a better knowledge of the warehouse which helps me a lot with my work. See if something happens, now I know where to go to key departments and who to see. ... and I've got a better idea of ***why*** *that hcppened. You've got a better idea of why and how things happen as a whole.*

This enhanced understanding of the workplace may filter through into improved work relations and practices. Having a better understanding of someone else's job promotes the development of empathy for that other worker and this in turn leads to enhanced teamwork and cooperation.

So it's not much good saying well this guy didn't want to do it because he couldn't be bothered. It's just that ah, well that's the process and maybe he forgot. So I can give him a hand or something, things like that. ... I've got more responsibility with the warehouse ... and hopefully with management commitment it works a lot more better.

Robert was not alone in expressing this view. When those involved with the project were asked whether the training really would make a difference on the shop floor, there was a common belief that it was already making a difference. Jason Gibbard, another of the participants commented:

It really should [make a difference] *because now we take a bit more care in what we're doing. We start to worry about the next person down the line from us rather than just get our job done and leave it at that.*

Barry Bell felt that the learning activities, which took people out of the training room and into other areas of the warehouse, were effective in developing more co-operative work relationships.

... one thing I was really impressed by is we are starting to name people ... Who do we see? - you know? People have gone out of the classroom situation and spoken and interviewed people. They've sat down with management, "First time this has happened, isn't this good? Yes, come back, you want to know any more information come back and see us." And people are really keen to participate.

As a senior shop steward, Len De Kauwe felt that he could actually see the changes in some of his members:

Well the lesson I've learned with all this sort of training, quite honestly, is that when you get people in

> *a workshop related sort of training program, you can actually see the success straight away. You can see it, you can actually see it happening.*

When asked to clarify or describe the changes he had seen Len stressed the importance of some changes in attitude: improved approaches towards work and workmates; more positive approaches to participation and problem solving; more conscientious thinking on the job; more effective participation in work groups. Len argued that these outer and observable changes are directly related to the inner changes in the trainees.

> *... it's done a lot for their self morale, they're more confident in themselves as human beings. Regardless of being a storeperson or you know, on the job. They've got more self respect now I think. It's like they've seen the light. ... I can't believe it quite honestly.*

Len reported on his own investigations to gain feedback from the participants. He was pleased with his members' responses. Len related an anecdote from one of the participants:

> *He was saying that prior to this he never asked questions. He was that type of person, sort of a loner, he would never ask. Now the comment I'm getting from him is, "Geez, if you don't ask you'll never know answers. So you won't learn." And he's in his mid-thirties, so it's sort of awakenings for the people. That's what I really think.*

Viewing the program from a management perspective Brian Whitcher also felt that there was evidence of change.

> *Oh, I think I've seen some change. I've seen some change in attitude. ... and you see a change in the way they go about their work. They're not talking* [unproductively] *as much as they used to, and that's after only four or five weeks. ... I tend to think there is a change although I can't put my finger on what it is.*

Bearing in mind the importance of time in change processes, Brian felt the real rewards of the program were still to be reaped.

> *It is a little early to judge ... but I'm fairly confident that it's going to be a good result. I think the thing about this is, we're going to benefit the most when we re-start employing people. ... There we have the basis of an induction program, ... We'll be able to give them some proper structured instruction and they can learn about finance and the other side of it, every aspect of the place.*

Endnotes:

1. AITB (Vic), 1992
2. Language in the context of this section is taken to include, spoken language, literacy and numeracy.
3. A. Eller, T. Roberts, P. Thomas-Walsh. Learning Outcome E12.1.1, from new Warehousing Elective Syllabus.

Chapter 9
Workbooks for Workplace Learning at Mercedes-Benz (Australia) Pty.Ltd. Mulgrave

Every company has a different style how things get done to their standard, their quality, to their product. ... That's how it should be done. ... to actually do the job, you must pick it out of the floor, because it's different from company to company.

Ernie Gugler
Truck Line Foreperson

9.1 Background to the Project

Work Change & Award Restructuring

Discussions on the possibility of a joint project at the Mulgrave plant commenced in April 1993. The idea arose in the context of award restructuring negotiations between the union, the AFMEU (Vehicle Division), and the company. These discussions, which had commenced as early as 1992, concerned implementation of a Structural Efficiency agreement and implementation of the Vehicle Industry Certificate (VIC).

David Ablett, Education Officer with the AFMEU noted that the agreement which emerged from these negotiations was significant from the union's point of view.

It was the first registered industrial agreement negotiated in the vehicle industry nationally, to implement the VIC outside of the major car manufacturers ... it was a landmark agreement.

David argued that the subsequent involvement of NALLCU was important because it helped to shape industry practices. Once it became apparent that NALLCU might be able to work with the company he was keen for this to happen. He was aware of NALLCU's work in the industry and the importance of language, literacy and mathematics in the context of training and workplace change. He suggested that a link should be made with NALLCU.

In an interview recorded in November 1993 Peter McDonell, Industrial Relations Manager at Mercedes-Benz, commented on how it was that NALLCU came to be involved with the company.

... the background for our training program was the pre enterprise bargaining agreement - which was an award restructuring agreement. ... We needed a training program to support that and we made a pretty heavy commitment to write a training program which would be accredited to the VIC. The union [had] *involvement in getting NALLCU along, it wasn't part of the enterprise bargaining, ... it was more David Ablett saying a few "What if's?" and we got Robin* [Sefton] *in and started to explore it. ... it seemed we could kill two birds with one stone as I put it, and knock over the literacy side of*

> *it as well.*

David Ablett, also remembers the conversation which led to the joint Mercedes pilot project.

> *The company was talking about these workbook packages. What we did is introduce them to the concept of an integrated model that would make off-the-job training more relevant and meet the learning needs ...with off-the-job and on-the-job forms of learning. So you've got workplace specific and then you've got classroom approaches Peter McDonell embraced that immediately. Then he said who's going to do it? ... We said we knew NALLCU could do it and there was expertise in NALLCU.*

Following several telephone conversations, staff from NALLCU met with company representatives, at the plant, to consider possible options. The meeting was exploratory, with no fixed agenda. As Peter McDonell noted, "*If our concerns match yours, then maybe we can get something happening*".

Mercedes-Benz at Mulgrave

The company's bus/truck assembly operation is part of the Mercedes-Benz operation at Mulgrave. The Mulgrave plant produces a range of heavy vehicles which include three distinct Mercedes products; Freightliner trucks in a variety of models which are built to customer specifications; and a range of Woerth trucks, also each with their own variations. There are approximately 118 people employed in the vehicle assembly area and a further 22 in the maintenance area. The total Mercedes-Benz workforce at Mulgrave numbers approximately 420 people.

Unlike most of the plants in the passenger vehicle manufacturing sector of the industry the Mercedes-Benz Mulgrave plant is not built around a moving production line. On a moving production line workers typically complete a small number of specific functions as the job, such as a vehicle body or engine block, moves through their work station. As each work station makes its contribution the product is developed.

By contrast, at Mercedes-Benz, whilst the job moves through a series of work sites, it is stationary on the work site whilst work is being conducted. Workers are organised into groups which work in these work areas around the job. Rather than being responsible for only one or two discrete functions, these work areas are responsible for entire systems or sections of the vehicle's construction. This means that the work tasks in the sub-assembly operation often involve a number of jobs and people working in a given sub-assembly area are required to learn several interrelated tasks.

Another key element in the assembly process is what Mercedes-Benz call the grouping system. This was explained by Dieter Stoklahsa, Manager for Assembly.

> *... Mercedes has a system from way back, which we call the grouping system, where every component has a group number. ... the Groups go from 00 to 99 and the components as such come in Groups,*

say start at Engine 24 and go to Chassis 31. They are the major groups. Within each group you have another break down of the group, from one to ten or more. ... [So the shop floor worker might say] *What's Group 54? - Electrical. Or, what's group 31? - Chassis. What's 24? Engine. ... There is a wide range of models and differences between models. ... The four lines are totally different from one another, but the basic grouping system remains the same.*

The role and operation of the grouping system is central to the assembly processes at Mercedes-Benz. As such it also needed to be central to the training program.

Integrated Model & Mercedes-Benz Approach to Training

At the time of the preliminary discussions the company was already committed to developing a training system based on enterprise specific workbooks. The workbooks were tied to the company award with pay points/classifications tied to satisfactory completion based on on-the-job competency assessments.

Efforts were already being made to reintegrate "in a common sense way" knowledge elements from the VIC curriculum. The industrial agreement which had been negotiated allowed for integration of the VIC knowledge unit competencies with on-the-job practice. As a Private Provider within the State Training System the company was registered to deliver parts of the accredited VIC curriculum. It had also obtained some funding via the Office of Training and Further Education to develop induction workbooks. These were cross referenced to the VIC for accreditation purposes. The training and production people were liaising to develop these workbooks.

In order to provide more training resources a trainer allowance was included in the award to allow for the development of shopfloor trainers. The trainers were to support employees in their use of the workbooks, to promote peer learning and develop positive attitudes towards training.

Another important factor was time. Production was not at optimum levels and the work schedules allowed some time for employees to train on-the-job. (This issue of time for training was later to become more critical as production schedules picked up and placed more pressure upon the available work time. To overcome this problem a shop floor Training Coordinator was appointed to match operational and training needs in a flexible manner.)

The company was also aware of language and literacy issues. Outer Eastern College of TAFE had already run in-house literacy programs for the company. There was a commitment to developing the workbooks with sensitivity to the needs of their intended users.

These existing systems of work organisation and training were part of the rationale for the pilot program, as David Ablett, Education Officer with the union, explained:

The Mercedes model, well it's sub-assembly, not moving line. So people work in groups already. So our position was why don't those people have a training resource with them, that they can refer to *and use for working through their work in their sub assembly areas. So these workbooks shouldn't be job specific, they should be area specific.*

It was this notion of workbooks for each area that was adopted for the project. The workbooks were designed to support the Mercedes-Benz production system described above. Up until this time most of the company's training had been induction training. Although some materials had been developed for the stores area, and some stores people were undertaking VIC training; the more difficult areas of training, for production and assembly, had been left until last. The workbooks were designed to support training for the actual assembly operations. It was clear the company had the necessary technical expertise to develop these areas but was constrained in its progress by three key factors:

* production requirements made it difficult to allocate the time necessary for quality curriculum development;

* specialist expertise in curriculum development and language and literacy was needed;

* it was necessary to integrate strategies for addressing language, literacy and numeracy needs (rather than conduct separate classes).

The company was looking for the right person to tackle this job and had already initiated discussions with Outer Eastern College on this matter. It was these areas that were targeted for the pilot project.

Agreement in Principle, with links to TAFE

It seemed that a joint initiative, to develop a pilot program based on the integrated approach, might address mutual needs. At this preliminary meeting it was agreed:

> "That NALLCU draft a project brief for consideration by the company and that both parties have discussions with Outer Eastern College of TAFE to determine their willingness to work as part of a collaborative team with NALLCU. Further meetings to be set following receipt of the draft brief and discussions with Outer Eastern College." [NALLCU File Note 19/4/93]

9.2 Getting the Project Moving

Establishing the Tripartite Steering Committee

A draft project brief was developed and circulated and a Steering Committee for the project was established with representation from the key stakeholders: the company; the union; Outer Eastern College of TAFE; and NALLCU. Although the project was managed by NALLCU the Steering Committee had responsibility for monitoring and directing the project and ensuring that desired outcomes were met and timelines achieved. The Steering Committee meetings were chaired by Peter McDonell. This was consistent with NALLCU policy in each of the plants in which it was working on integrated approaches to training. It was considered vital that industry personnel have a sense of control over and ownership of the development processes. It was believed that the outcomes of the projects would not be fully accepted without this level of involvement and commitment. The Steering Committee was also responsible for accepting and adopting reports on the project and determining the scope and nature of information to be shared with other companies.

The first meeting of the Steering Committee was held on 19 May 1993. The committee was comprised as follows:

Peter McDonell - Manager, Industrial Relations
Alan Williams - Manager, Employee Development
Len Hasson - Supervisor, Maintenance & Assembly
Dieter Stoklahsa - Manager, Assembly
Gary King) - AFMEU (Vehicle Division) Shop
Tony Van-Schyndel) Steward
Vince Pepi)
Dave Smith - Work Change Adviser, AFMEU (Vehicle Division)
Denise Oakley - Outer Eastern College of TAFE
Robin Sefton - Manager, NALLCU
Peter Waterhouse - Curriculum Officer, NALLCU
Rosemary Deakin - Curriculum Planning Officer, NALLCU

In Attendance:

David Ablett - Education Officer, AFMEU (Vehicle Division)
Lynn Wallace-Clancy - Project Officer, NALLCU
Jim O'Brien - Project Officer, Outer Eastern College of TAFE

Ratification of Project Brief

The draft project brief was considered and ratified at the first meeting of the Steering Committee. The stated aims of the project were:

* to develop an overview of the VIC at Mercedes-Benz, using an integrated approach.

* to select the first area of development of the curriculum and design, develop, trial and evaluate the learning materials customised to meet the training needs at Mercedes, using a collaborative approach and an integrated model.

It was agreed that the training should focus on the Assembly area and that "this pilot project would serve as the model for the development of the VIC more generally at Mercedes at a later stage" [Minutes of Steering Committee, 19/5/93]. A timeline was adopted which would see materials being developed and trialed by mid November, with the results fully documented by December 1993. This was an ambitious schedule made necessary by the WELL funding. This case study represents the culmination of these development and documentation processes.

The decision to conduct a Learning Needs Assessment was also made at the first Steering Committee meeting. This proved to be an important part of the development process and is discussed in more detail later in the case study.

Forming the Project Team

Given the tight timeline it was necessary to have the project team "hit the ground running". The two project officers chosen to work at Mercedes-Benz were also present at the initial and subsequent Steering Committee meetings. The project team was Lynn Wallace-Clancy, employed as a Curriculum Officer with NALLCU; and Jim O'Brien from Outer Eastern College of TAFE.

Lynn was already employed by NALLCU as a coordinator based in the State office of the vehicle builders' union. She came to the project from a background in teaching English as a Second Language in the English in the Workplace Program (EWP) with Adult Migrant Education Services. Lynn's time fraction with NALLCU was extended to allow her to take on the additional responsibilities of the Mercedes-Benz project. Jim was already known to the company and to NALLCU through his curriculum work in the industry, and in particular on the VIC.

The approach adopted by the project officers is discussed in more detail below. The two Project Officers met and commenced work immediately, each working two days per. week on the project. These days were timetabled so that the project officers could work as a team.

Being Based on the Shop Floor

One of the key principles underpinning the approach was that of effective collaboration. In order to optimise opportunities for effective collaboration the project officers were based on the shop floor. Towards the end of the project Lynn commented on the importance of their location. She discovered that this was much more important than she had anticipated. She cited three reasons. First, the location helped the project team develop effective working relationships on the shop floor.

> *Originally, when Robin* [Sefton] *insisted on that I thought 'Ho hum, OK. A bit of window dressing'. But it wasn't, it was enormously helpful to be there. Now I'd say it was vital. It gave us credibility and helped us get the trust we needed to work effectively. We became familiar faces - 'the man and the lady from TAFE'*

Secondly, being on the shop floor facilitated the detailed day-to-day research required to have the curriculum accurately reflect the Mulgrave manufacturing environment.

Logistically it made a difference too, because we were there - you were much more inclined to check up on small questions, little things. If you had to make a trip from the office or the college for those things maybe you wouldn't bother, or you'd try to do it on the 'phone and it wouldn't be the same - being there involved the shop floor people as stakeholders in the [curriculum development] *process.*

Thirdly, their location gave the team informal and ongoing exposure to the culture, the work processes and the work organisation of the Mulgrave plant.

It also helped us gain a knowledge of their processes, the work processes. It was especially important in understanding communication issues, quality concerns, and OH&S stuff. Those issues can't be demonstrated in one visit, or even a series of visits, you need to be there. It needs to be on-going, over an extended period of time, that's what we had.

9.3 Learning Needs Assessment (LNA)

An LNA was conducted at Mercedes-Benz during June/July 1993. The results of this process were documented in a report to the company (L.Wallace-Clancy, July, 1993). The LNA report noted the "enthusiasm and skill displayed by Mercedes trainers" and the potential for peer language support groups in the Mulgrave plant. The results of the LNA suggested the viability of the proposed integrated workbook program.

The report on the LNA recommended that "all workbooks written for Mercedes VIC be specifically planned to allow for the development of language, literacy and numeracy skills, concurrently with VIC training." It further recommended the development of Plain English strategies and the promotion of learner support strategies as part of an integrated model for the VIC. These strategies included supporting common language learning partnerships; developing the Mercedes trainers as literacy/numeracy tutors (in particular, tutors to support employees with writing difficulties); as well as giving consideration to providing audio tapes to support at least some of the workbooks.

The conclusions to the LNA report noted that "a significant number (of VIC applicants from the assembly area) wish to improve their literacy and numeracy skills whilst undertaking the VIC." This was a need that had to be addressed. The LNA in addition to the work the company had already done (with Outer Eastern College) gave the project team a good picture of the needs to be met and provided a firm foundation on which the curriculum materials could be developed. As Lynn Wallace-Clancy commented.

I think the LNA did serve as the benchmark we were pitching at. It made the whole [curriculum development]*process less abstract. We had faces we could fit to whom we were writing. It meant I could think, "Will this be accessible for so and so?" It really did influence the way we developed the handbooks.*

An additional and valuable outcome of the LNA process was the development of effective working relationships which came through the contacts for organisational arrangements and the assessment interviews. Having met people during the LNA process Lynn was able to build on these relationships as the project progressed.

9.4 Curriculum Development Process

Conversations On The Line: Developing the Workbooks

The workbooks were developed in close collaboration with shop floor personnel. The team used a combination of interviews, observation, note-taking and photographs to document and describe the shop floor processes and practices. Nadesan Nanthakumaran, Leading hand on the Freightliner assembly, stressed the importance of the curriculum coming from the shop floor and explained the way the data was gathered;

> *They decided to go do some book in brakes, so they asked me to come and help. So what I did, when they needed any help... they come down the line. I take them along ... because I am the person doing that job, so* [I showed] *how we are laying down the pipes and what are the models. ... I took the valves and laid them on the tables and they came, took the photographs, with my assistance. You know different types. I took them to the line and I explained this type has this one, different ones. I explained the differences and we worked together. Whatever they asked, I gave the maximum help for them.*

The information gathered through these conversations on the line was subjected to repeated cycles of confirmation, revision and redrafting. Dieter Stoklahsa, commented on the shop floor collaboration and the way this process dovetailed with the existing Mercedes-Benz systems.

> *When we first inspected the first workbook that Jim and Lynn brought up, I initially went through it and brought some of my foremen that are involved in the particular workbook up here and we went through it, firstly I went through myself. ... I made several adjustments, not because of their workmanship, but simply to stick to the system as we were used to it. Useful hints in other words, nothing more. ... all I did was actually modify it. I told 'em look, since you are going already into this so deeply, use some of the specifications that the people are used to and some of the paper indications such as the German grouping system...*

Not only was Dieter pleased with the way the curriculum connected with the Mercedes-Benz systems, he also noted that the processes became more efficient as the project proceeded.

> *... it took it on well, with just minor alterations. They've done a marvellous job, and we assisted them in every way we could. I went through the rest of the books as they were presented to me and it got less and less to change. Because by doing the first one or two books correctly, then they could follow the system far better and they knew what we were on about.*

The team found that their best informants were not necessarily those in positions of responsibility. Sometimes these people were too busy to be able to give the time required, nor were they necessarily oriented to a training perspective. Sometimes they simply didn't know the answers to detailed questions about shop floor practices.

In order to establish the necessary balance in the training the team found they needed a combination of sources. On the one hand they needed detailed knowledge about production processes and terminology. This usually came from skilled employees who had been doing the job recently and therefore had an intimate understanding of the requirements. On the other hand they also needed people who could offer a broader vision; those who could explain how a particular process related to other processes in the system. With an aim to provide training which integrates strategies to improve workplace communication, occupational health and safety, and product quality, the team were concerned to document not merely what is; but what could be. Without this broad and critical reflection the process could become reductionist and fail to generate the creative thinking and problem solving required for effective workplace change.

The project workers therefore needed to maintain a critical awareness of the broader picture; the manufacturing processes and the developmental sequences for employees - as well as close attention to detail, terminology and work practices. They needed information from a range of sources to attain the balance.

In line with the principle of acknowledging the expertise of stakeholders, all informants were formally acknowledged in the workbooks to which they contributed.

The Workbooks

In all the project produced fourteen workbooks in the following areas:

* Air Systems 1, 2 & 3 for the Woerth Truck Line
* Air Systems 1, 2 & 3 for the Bus Line (405)
* Air Systems 1, 2 & 3 for the Bus Line (1418)
* Air Systems 1, 2 & 3 for the Freightliner Line
* Cab Assembly for the Woerth Truck Line
* Cab Assembly for the Freightliner Line

In addition a first draft was completed for a workbook on axle and spring assembly for the Woerth Truck Line.

It should be noted that the workbooks were conceived, not only as initial or induction training materials, but as Reference manuals which would be available (in their bright red ring binders) on the line, for all employees.

As reference manuals the workbooks would provide consistent instruction for, and documentation of, processes which up until this time, had not been written down. The workbooks were designed to improve workplace communication, to promote sound OH&S practices, to encourage critical thinking on the job and to develop a quality consciousness.

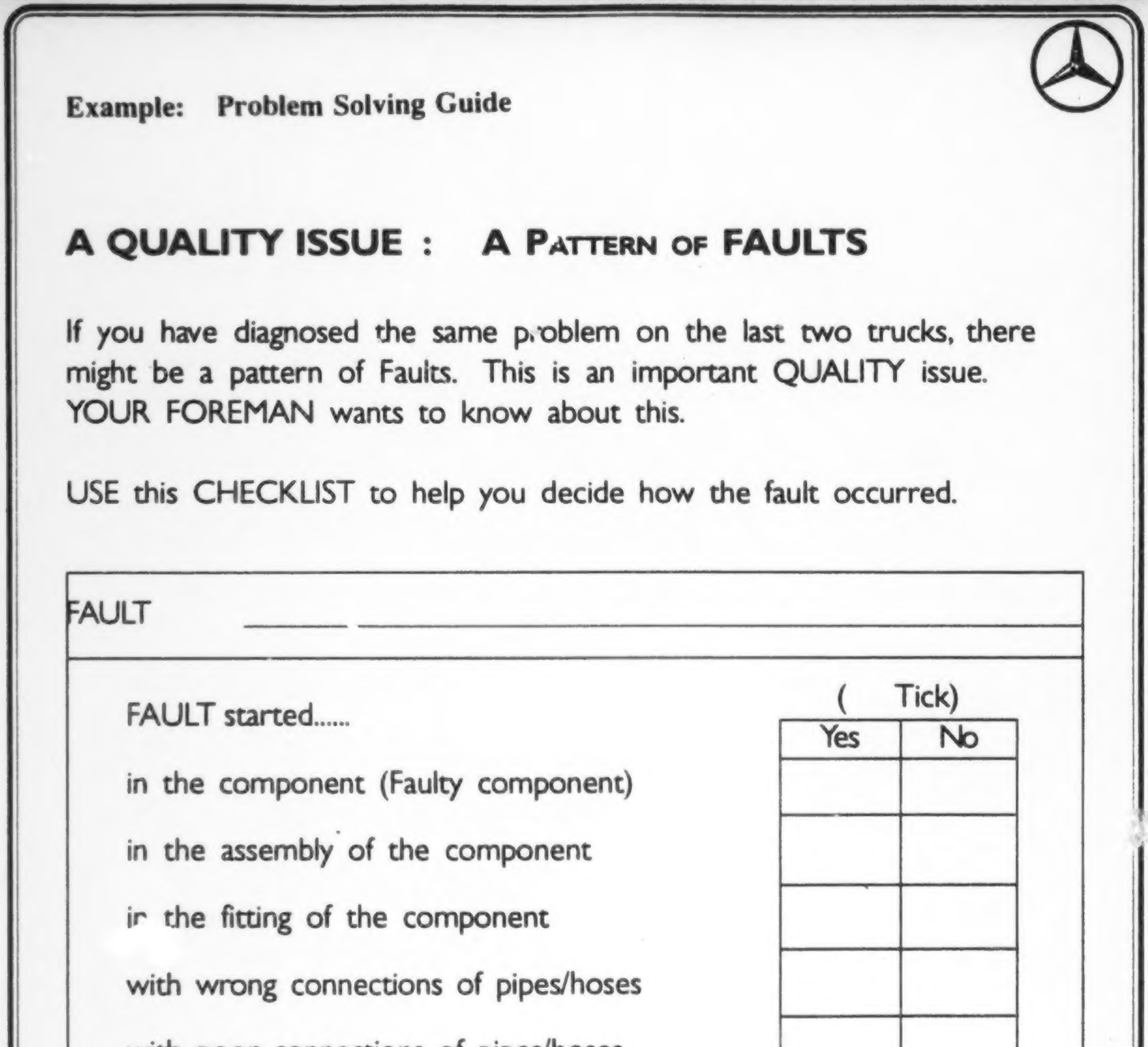
Built into their development was an awareness of the language, literacy and numeracy skills of the shop floor employees. The workbooks were written with this specific audience in mind. A "reader friendly" style was developed and maintained consistently throughout the workbooks; the familiar pattern and style enhanced their predictability and readability. Careful attention was given to the appearance and layout of the text and to the logical structure and sequencing of the content. Key words were highlighted with bold font to cue the reader into noticing them. There was generous use of "white space" around the text so that readers would not be intimidated by dense blocks of print. The Gilsons font used throughout the workbooks was relatively large, clear and uncluttered.

The workbooks made extensive use of illustration and colour photographs. Use of text was kept to a minimum and plain English was used throughout. However the team took the view that the workbooks should also reflect the technical language of the shop floor as accurately as possible. Technical and workplace words were used. However the text was carefully structured so that the majority of employees would be able to read the meaning of difficult or technical terms from the context, the photographs and illustrations, or by drawing upon their everyday knowledge of the workplace.

There was also a developmental sequence built into the workbooks. Those at the higher levels of skill development required more sophisticated literacy and numeracy skills than those in the lower levels. For instance, more writing was required in the higher level workbooks. This reflected the literacy requirements of the workplace tasks being depicted within the books. However, the team were aware of employees' concerns about writing and the writing tasks allowed for a range of appropriate responses, from one word answers (with invented spelling) through to fully formed sentences in paragraphs.

As a result of the collaborative development processes the workbooks contained negotiated and agreed procedures for on-the-job practices. They presented and promoted what was seen to be best practice within the Mulgrave plant. There are several problem-solving guides in the workbooks. These mainly deal with OH&S or quality issues and they are intended as guides for the trainees. However the team saw these as having a broader use throughout the plant, particularly in the context of the possible introduction of workgroups at Mercedes. It was felt that these materials might be useful for groups working on recurring quality, waste or OH&S issues. An example is included on the following page.

The workbooks also contained activity sheets (see page 174 for an example). These were intended for individuals to use as aids to problem-solving and then keep as a reference for their own future use. For instance, one of the sheets provided the trainee with guidance on the pipes required for particular truck models requiring particular features. Once completed the activity sheet will serve as a permanent (and personal) reference for this information.



Example: Problem Solving Guide

A QUALITY ISSUE : A PATTERN OF FAULTS

If you have diagnosed the same problem on the last two trucks, there might be a pattern of Faults. This is an important QUALITY issue. YOUR FOREMAN wants to know about this.

USE this CHECKLIST to help you decide how the fault occurred.

FAULT ______________________________

FAULT started......	(Tick) Yes	(Tick) No
in the component (Faulty component)		
in the assembly of the component		
in the fitting of the component		
with wrong connections of pipes/hoses		
with poor connections of pipes/hoses		
with faulty pipes/hoses		
with kinked hoses		
with split hoses		
with hoses over tightened		
with twisted hoses		
with hoses clamped too tight		
with flattened hoses		

Assembly Op's - Level 1 - Woerth Truck Line (AIRSYSW1.PM4) Page 54

Example: Trainee Activity Sheet

ACTIVITY 1

Go to the Holding Bay and fill in this chart about 3 different Woerth trucks.

NAME	MODEL NO	ANY SPECIAL FEATURES YOU SEE ON THIS MODEL

Trialing the Draft Workbooks

Once the team had produced a substantial draft of any given handbook it was re-circulated to the management and shop floor people who had been involved in providing the curriculum information. During the course of the project the first workbook was trialed with an employee who knew the area well and with another who had not worked in the target area. Len Hasson acted as liaison between the project team and the shop floor to ensure that the relevant production personnel, including leading hands, and foremen, were happy with the draft before it was finalised.

As the project gathered momentum the team had several handbooks "on the go" at once, with each at various stages of development. Many adjustments were made to content and presentation throughout these drafting and revision processes.

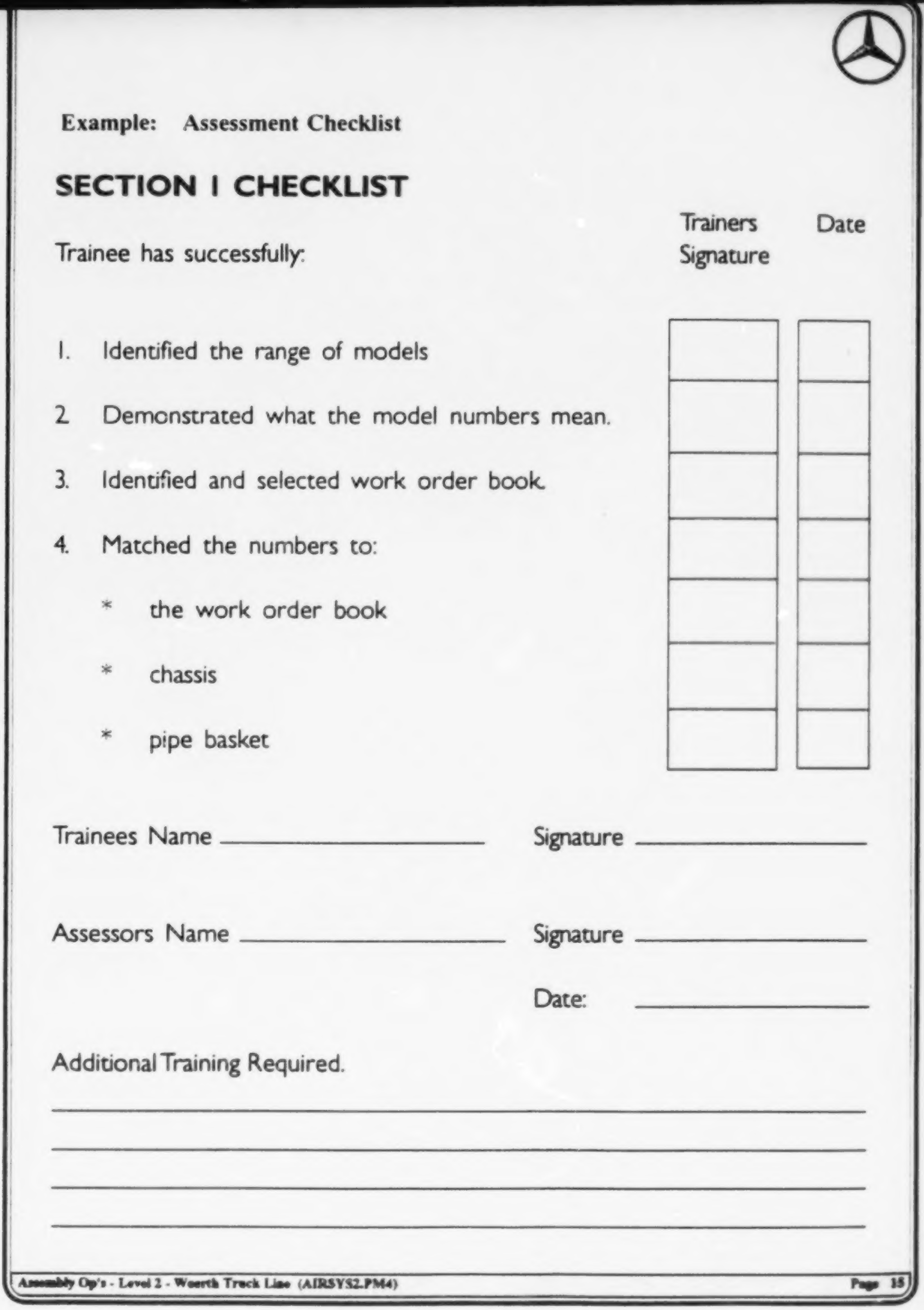
Assessment Practices

At the beginning of each handbook the team cross referenced the content to the accredited VIC syllabus so that trainees could identify the skills, core knowledge and elective components of the syllabus which were being covered. As one of the original architects of the VIC, Jim O'Brien was well positioned to see the way in which the Mercedes curriculum was covering the original syllabus.

Each handbook also featured assessment checklists for each section of the curriculum (see page 176 for an example). These checklists identified the skills, and knowledge required for completion of each section.

The implementation strategy would require the close involvement of shopfloor trainers to support employees in their use of the workbooks. These same trainers would be responsible for assessing employees work against the standards established in the workbooks and agreed with through the collaborative development processes.

The checklists for each section were designed to also facilitate the processes for recognition of the skills and knowledge which employees already had. By making reference to the checklists throughout the handbooks employees will be able to identify those areas in which they need training, but also those areas in which they might seek Recognition of Prior Learning (RPL) assessments.



Example: Assessment Checklist

SECTION I CHECKLIST

Trainee has successfully:	Trainers Signature	Date
1. Identified the range of models		
2. Demonstrated what the model numbers mean.		
3. Identified and selected work order book.		
4. Matched the numbers to:		
* the work order book		
* chassis		
* pipe basket		

Trainees Name ____________________ Signature ____________________

Assessors Name ____________________ Signature ____________________

Date: ____________________

Additional Training Required.

____

____

____

____

Curriculum Development Expertise

The combination of language-literacy specialist and vocational-technical specialist worked very effectively at Mercedes-Benz. Lynn noted that Jim was very quick in developing their orientation to the technical processes and she was quite prepared to follow his lead on many occasions. However she also commented on the invaluable role of the non-technical educator who views the processes with a learner's eye.

You are not a technical specialist so you have no reputation to protect. You can and should ask the naive questions - about assumptions being made by people with more experience. "Yes, but why?" or "I don't follow there." ... Often because they've been doing it for so long they don't think about those things and they need to be brought to the surface and highlighted.

The non-technical adult educator may also be helpful in maintaining a holistic and person-centred approach to the training. It is easy to become so involved in the technical details and processes that the overall picture is lost and the needs of the learners can be forgotten.

One of the objectives at Mercedes-Benz was to develop training materials which would, subject to agreed criteria, ensure access for the maximum possible number of employees and provide those people with the opportunity to extend and develop their language, literacy and mathematics learning within the context of their vocational training. As mentioned earlier, specialist knowledge of the learning needs of employees with limited educational background and languages other than English was vital in the process of designing the workbooks to meet the needs of the non-trades employees at Mercedes-Benz.

An additional benefit of the interdisciplinary team approach to curriculum development was the opportunity afforded for informal professional development; the opportunity to work collaboratively is an opportunity to learn. Lynn commented on the way working as part of a team facilitated her own development.

You learn an enormous amount from one another. It has been a very profitable professional exchange. I really enjoyed the partnership.

9.5 Implementation Strategy

It is important to note that, although the Mercedes-Benz training system is based on workbooks, these do not stand alone. Without an effective implementation strategy, the workbooks cannot be expected to produce changes in behaviour or skill formation. They therefore need to be seen as an essential part of a systematic approach to training and development across the company. As David Ablett commented;

What the Mercedes agreement is, it is to use the workbooks as one learning methodology, one learning methodology, and to mix workbooks with classroom based training and with peer assessment, tutoring on-the-job, self paced assessment and self paced learning in teams or groups on the job. That's what the agreement was set up to do.

David argued that some people have not yet seen past the development of the workbooks themselves. However he noted that;

> *... you need the workbooks to start the process. You've got to have the material in front of you to start the process.*

Once it was evident that the workbooks were well underway an implementation working-group was convened to develop the implementation strategy. This group comprised of the project team as well as Garry King, the AFMEU (Vehicle Division) shop steward; and Len Hasson and Alan Williams representing company management. It was, in effect, a sub-committee of the Project Steering Committee.

The working-group determined that the workbooks should be presented in two ways. First, each workbook would be presented in a four ring binder, distinctively coloured, and with each page laminated for protection. These binders, for collective use, would be kept on the shop floor in Workplace Reference Libraries adjacent to each production line or workgroup area.

In addition to the ring binder there would be a Trainee Response & Assessment Booklet for individual use. The Trainee's Booklet would contain all problem solving, activity and response pages from the workbook. However it would be reproduced in black and white, rather than colour, and it would not be laminated. This would enable costs to be kept low enough for trainees to each have their own copy for training and future reference.

The working-group also considered the critical role of trainers in supporting the workplace learning, monitoring trainees' progress, assessing competencies and maintaining the overall relevance and integrity of the system.

When interviewed about the project Alan Williams commented on the role of the trainers.

> *They are crucial to the whole thing obviously. They are selected from the people on the shop floor, ... They will be there in a support role, an encouragement role, a guidance role, to help people over the sticky spots. They don't replace the foremen or the leading hands. They are there in a purely training role. ... also the area of competency assessment, we'll use them in that role. ... I guess the other area that is important is that they will be the custodians of these workbooks ...*

The committee recommended that trainers should be appointed for each work area and that they should be selected for both technical skills/knowledge and their aptitude for training. They further suggested that the trainers receive training as trainers to use the workbooks as well as the technical training to acquire the necessary on-the-job skills. It was also recommended that the trainers receive training to appreciate the importance of language, literacy and numeracy skills and to act as literacy/numeracy tutors where required. The work-group stressed that trainers will need to acquire the skills and knowledge in each workbook **before** they are expected to train others in that area.

It was also proposed that the trainers accept responsibility for monitoring the content of workbooks and maintaining their relevance. Changes in shop floor procedures or practices would be identified by the trainers and they would then advise the Shop Floor Training Coordinator to ensure the necessary changes are made in the workbooks. For this reason the workbooks would be maintained in looseleaf ringbinders and the Trainees' Booklets would be photocopied in small print runs as required.

The implementation working-group also suggested that a General Reference and Resource collection be established in the Mulgrave plant. This collection would hold additional textbooks, study extension materials, manuals and additional resources which could not be duplicated for each of the workstations. Access to this general collection, on an occasional basis, would enable employees to extend their study.

The recommendations of the implementation working-group were discussed by the Project Steering Committee and adopted in principle.

9.6 Observations and Reflections, by Peter Waterhouse

Interviews were conducted, by Peter Waterhouse, with all the stakeholders, offering different perspectives on the project. The following observations and reflections on the project were written by Peter, based on the themes that emerged from the interviews.

Enterprise Owning the Curriculum

The more people the project team talked to and involved in the processes the more stakeholders they created. This was intended to help the employees develop a sense of ownership of the curriculum and thus promote positive attitudes towards training. This process seems to have been successful.

Dieter Stoklahsa, Manager for Assembly, felt that the curriculum project team became part of his production team. He was pleased with the project outcomes which he believed would help to improve communication and product quality.

... we had in the past, difficulties with people understanding what the heck we are on about when we said Groupings. It took some time to bring it to their understanding what a Group meant. ... But now with the actual workbooks, with the descriptions and even with some of the funny drawings that we put in, they're good. People can open it up and can actually follow from stage one right through to the actual production.

When asked whether he thought the benefits would be transitory or longer lasting Dieter was confident that the project would have a longer term impact.

I believe so, Peter, because for the simple reason you have established something. ... At least now we know exactly what to give them. Which in the past we didn't have, other than verbal or physical demonstration to work with the guys. So they [could] *only listen. Alright we had little descriptions and job instructions, but this is different because they can actually take it home with them, study it, ask* *questions, ask as many questions as they like. We never had this before. ... It is of value for the future, not only for the present.*

Dieter felt that his production people were also pleased with the outcomes; so much so that he felt larger than life.

... they're quite happy, because now they can actually open up a book, whether it's a tool listing, whether it's talking, whether it's instruction. Now they say, "Now we've got something that we can read up on, even at home." That made me feel ten foot tall even though I'm five foot nothing. But it feels good - when the team is running with you. You understand what I'm trying to tell you? I'm rather pleased at what has happened in that short period.

Expressions of support for the curriculum also came from the union and shop floor employees. In particular, there was universal endorsement of the process which develops the curriculum from a critical appraisal of shop floor practices. As Nadesan Nanthakumaran said;

I agree with that, it has to come from the shop floor because the people on the shop floor are the only ones who really know. I mean they are the ones doing it.

Ernie Gugler also reinforced this point with a unique turn of phrase which captures the spirit of this curriculum development process.

Every company has a different style how things get done to their standard, their quality, to their product. ... That's how it should be done. ... to actually do the job, you must pick it out of the floor, because it's different from company to company.

Peter McDonell pointed out that the real impact of the program will not be felt for some time yet. However he felt that senior management's ownership of the program boded well for the future.

I'd qualify it by saying it's early days, as you know these training things take a long time, to get the culture change going on. I think some of the senior management that have been around for a while, after having been a bit suspicious at the front end, are now owning it, and that's critical. I know the groups I'm involved with are full of praise for it.

Valuing the Process

Peter McDonell noted that the company would benefit not only from the curriculum materials emerging from the project, but from the methodology of the project itself. In other words, the process was as important as the products.

Yes, because what we're going to get out of it. You guys get your format, which you can sell or whatever you want to do with it, as a process, but we've internally got a pretty priceless format for running and developing the rest of our training, implementing it etc. That's the critical lesson or output for us.

Alan Williams also noted the value of the company adopting the methodology which the project has introduced.

> *Well, the lessons we've learned, the methodology, right, and the presentation techniques. How Jim and Lynn have gone about extracting the information from the shop floor, all those things are invaluable. Because, one of the side issues is, they've actually trained the people on the shop floor to give us the information. What started off as a fairly long process ... is much shorter now, because you've virtually conditioned the people to package the information in the way we need it. So it makes it a quick process but a very complete one. So we don't miss anything. So that's good.*

When asked whether he would see the same consultative methods being used in the future Alan was very positive.

> *Definitely we will continue with exactly the same approach until we complete all the workbooks next year. That's been really worthwhile so far as we are concerned.*

Selection of Staff & the Development Approach

Alan Williams was also asked to comment on the selection of staff for this kind of work. He felt that choosing the right people is absolutely vital.

> *...it's vital. I would say someone who came from a purely TAFE background, would have problems being accepted on the shop floor and that's no reflection on them. It's just that they wouldn't know how industry works to the level of detail like Jim, who has worked in industry, and Lynn who has worked with shop floor people. That's the perception, not so much the of the shopfloor people, as maybe supervision and management down there ... I think that's where Lynn and Jim were excellent.*

Alan also felt that the approach adopted by the project team was a key element in their effectiveness. He characterised their method as a "softly, softly approach" which was sensitive to the day-to-day pressures within the Mulgrave production environment.

> *... you know, don't be too intrusive or too demanding. And be a bit patient. I think this is what Lynn and Jim did. They started slowly. ... You see my impression is that nearly all line managers are Production! Production! Production! ... Anything else is a bloody nuisance right. I think Jim and Lynn got on well because they spoke to Dieter and said, "Well we're here to help rather than to hinder, and you know, we'll fit in with you rather than you fit in with us," sort of approach. I think that's the way you have to do it in a production environment.*

Another important element in this approach is the ability to listen effectively. Alan stressed the importance of curriculum developers approaching the task with some humility rather than a set of preconceived ideas. The emphasis needs to be on sensitively tuning in to the workplace culture and practices whilst simultaneously considering how the educational input can best contribute to the enterprise. The success depends upon the development of effective dialogue, as Alan noted:

> *... that's right, tell us what you do and we'll see if we can't articulate that into a workbook, and you'll get a chance to discuss that. And we'll maybe add some things, if you want to discuss that ...*

Lynn Wallace-Clancy commented on her approach:

You need to have your antenna out for where your project fits in the enterprise's big pictures - into their training plan, into their change processes. You need the ability to say, "I don't know, can you tell me?" You need to be flexible; you can't assume that your world is their world. Your priorities are not theirs and nor can they be. For me it's not a formula, it's an approach to the task.

The project team's status as honorary members of the production team, suggests that all of these processes were managed with a considerable degree of skill and sensitivity. Dieter Stoklahsa said of the Project Team,

But they became just another part of the [production] *team. I would put my hand in the fire for them because they are part of the team like everyone else.*

Shop Floor Training Coordinator

Another point to be noted in this final section is the significance of the company's creation of a new position to coordinate training on the shop floor. When the pilot project commenced the Mulgrave plant was not running at optimum production levels. This meant that it was relatively easy to arrange time for shop floor training opportunities. However during the course of the project new orders were received and production levels in the plant soon increased. It quickly became apparent that training outcomes and production imperatives could be in conflict unless someone had responsibility to coordinate the shop floor training to fit with production requirements.

The Shop Floor Training Coordinator will be the first point of contact for the trainers and will play a key role in monitoring and maintaining the training system. The creation of this position reflects the company's recognition that the workbooks alone do not constitute an effective training system. Employees need time and support to take full advantage of the training materials. This new position will ensure that such opportunities continue to exist.

Theory into Practice - or Runs on the Board

Peter McDonell was asked whether he saw the project actually making any difference on the shop floor at Mulgrave. Whilst he confessed to some feelings of uncertainty at the beginning he expressed pleasure at the outcomes to date.

... Everyone was a bit hesitant at the start but I think we managed to pull it off. The first few meetings, people had different aims ... but now everyone's coming out the other side satisfied with their aims but it was a little bit touchy at the start.

A little later he elaborated on the difference between having plans (for training and change) and actually having things happening - or as he named it, putting runs on the board.

... so we had all these wonderful things called curriculum frameworks, and skills audits and skills analysis and all these wonderful game plans but there weren't the runs on the board. But ... the profile is there now, we've got these things with pictures in them, you can touch them, feel them, show them, pass them on. There's more profile on it now. ... it's there live on the shopfloor. This is

the breakthrough I think we've been wanting a while.

Peter saw the pilot project as part of broader movements for change within the company. He placed the changes within the context of the workplace reform.

> *Oh definitely* [it will have an effect]. ... *What we're finding now through award restructuring, enterprise bargaining, workplace reform, all this stuff that's now generating people's remuneration or wages. We're now measuring things, we're now looking at skill levels, we're getting more into critical areas of performance in the business. This project is part of that whole ongoing program. That's got to have an ongoing effect. I think it has it's moments when people get frustrated with it, but it's got to have a huge effect and hopefully ... it will be reflected in less labour turn over and a more committed workforce and those sort of things.*

Speaking on behalf of the union, David Ablett also commented on the value of the project. He argued that it had achieved some of the outcomes that were originally envisaged when negotiations on training commenced with the company back in 1991. He felt the project demonstrated the viability of workbooks for some employees and some contexts within the industry. David summed up by saying;

> *The union endorses the project because it believes that project driven work and activities that link knowledge and skill competencies are definitely the way to go, particularly in areas where you have sub-assembly operations.*

Commenting from a shop floor perspective, Nadesan Nanthakumaran also felt that the project would bring long term benefits to the company and the employees. He felt that the systematic introduction and support of the workbooks would lead to the development of a common production language across the plant. He believed the training would "*build a lot of benefit to the company*" yet argued it would also "*make life easier for the people on the line*" - primarily because they would have a better idea of what is expected of them and clear guidelines to follow.

> *Definitely it will do that. ... It will come. They will learn. They will start to do things in a systematic way. When they start to refer to the books they will start to use the right terms. ... it will enhance their knowledge, they will get used to knowing how to read drawings, things like that, which makes it easy for those operators who are on the line. ... They will start to go to use the right nuts, bolts and fittings according to the specifications. It will help us a lot. Yes, we will get the harvest in the long run, we don't get it immediately,* [but] *definitely we will get it.*

BEST COPY AVAILABLE

Chapter 10
Consulting for Curriculum Development at Mitsubishi Motors, Adelaide

... generally training has been divorced from the workplace but the integrated model makes it more relevant as it addresses the issue of literacy and language. Literacy and language used to be separate, whereas this model says literacy and language questions are addressed and resolved in your curriculum, in your VIC. I think it's very good.

Peter Scullion
Workplace Change Adviser
AFMEU (Vehicle Division)

10.1 Background

Mitsubishi Motors Australia Limited (MMAL) is a company with the principal and equal shareholding being held by Mitsubishi Motors Corporation, Japan (MMC) and Mitsubishi Corporation, Japan (MC). MMAL business includes: wholesaling of vehicles, both locally manufactured and imported; export of vehicles to Europe, America, Japan and the Pacific basin markets and the manufacture and supply of automotive components to other Australian and overseas automotive manufacturers.

MMAL has two plants in Adelaide. The Tonsley Park site, covering 71 hectares, incorporates the company's Head Office, Engineering Design and Development, Assembly Plants for cars and trucks, as well as a Toolroom, a Press Shop and a Parts and Accessories Warehouse.

The Lonsdale site covers 37 hectares and includes the Grey Iron and Aluminium Foundries, Diecasting Plant, Machine Shop, Engine Assembly plant and Engine Development and Testing Laboratories. The company also has Regional Sales Offices in capital cities across the country and a Parts and Accessories Distribution Centre in Sydney. Across Australia MMAL employs over 4,800 people.

VIC Training at MMAL

At the time the pilot project was proposed, Mitsubishi was in the early stages of its VIC implementation program. The company had engaged TAFE personnel to develop a skills and training matrix and work had commenced on assessing skills within the workforce. Some curriculum development work was also underway, this was proceeding on a topic by topic basis. However, there were no VIC classes being delivered.

Union Response to Developments at MMAL

Whilst union officials expressed pleasure at the development of the pilot project, there was concern that the overall implementation of the VIC had not proceeded as swiftly as hoped. Referring to the implementation of the VIC, John Fickling, AFMEU (Vehicle Division) Shop steward, noted,

> *... the quicker it gets developed the better you know. I suppose our problem is that it's taking too long. At the end of the day it's costing people dollars.*

John's comments were reinforced by Peter Scullion, Workplace Change Adviser, AFMEU (Vehicle Division).

> *It's been a real sore point with our union. We've been asking ...when's training going to happen? ... We expected some implementation of the whole* [VIC] *and ... it's come down to implementation of merely a pilot at the moment...*

Concern was also expressed that developments late in 1993 were taking advantage of some excess labour capacity in the plant. Grace Benvenuto, Ethnic Liaison Officer with the AFMEU (Vehicle Division), stressed that the commitment to training needs to extend beyond times when production schedules and demand for labour are relatively low.

> *I think it's important to get the commitment for the long term, not to have a massive training thing happening for two or three months just while things are slow, but to have that continuous right through the year. So that it is ongoing it's not just up and down according to the situation. I think that's really important so far as the union is concerned, that the training is maintained even when production is picking up.*

Another factor identified by John Fickling was the importance of the training adequately addressing the concerns of shop floor employees who may be hesitant about taking on training or returning to study. This was an important factor because of the nature of the Mitsubishi workforce. John was confident that the training being offered would address the learning needs of the shop floor.

> *I think one of the biggest problems at Mitsubishi is that the workforce ... at least 75% of them, have been working here for 25 years, so they've been out of the classroom situation for so long that it would be a real problem if they actually got into it. I mean part of this program that we're going through now is this "learning to learn" which is terrific... I mean the actual fear of getting back into a classroom situation is a real problem. But I'm surprised that out of Hardware the amount of people that are prepared to give it a go, it's great.*

10.2 Establishing a Project for an Integrated Model

Following some informal discussions, a formal meeting to explore the notion of an integrated model at MMAL was held at the Company's Head Office in Adelaide on 22 March 1993. At this meeting, members of NALLCU presented a proposal to the Company and Noarlunga College of TAFE representatives.

At this time MMAL had a NALLCU Coordinator, Margie John, who had been working with them for 2 days a week in this role, and previously as a consultant from Noarlunga College of TAFE. A survey of literacy, numeracy and English language needs of non-trades employees had been conducted in 1992 and a report written. Significant needs for literacy and language skills were identified.

As delivery of the VIC had not yet started, Margie John had been working with the people developing curriculum for the VIC, including self-paced materials and a unit on Problem Solving.

The integrated approach to training received a positive response from the Company who were keen to become involved in a pilot program with NALLCU's assistance. The principles of integrated training reflected the way in which the Company wanted to proceed with all of its VIC training.

Problems remained, however. Firstly, as the VIC delivery had not commenced, the notion of targeting an elective unit was not considered by the Company as being appropriate at that time. Secondly, to concentrate effort in only one plant, as required for the pilot project, did not match the practice of the Company. Lastly, there was no enterprise-based agreement to cover VIC training at the time.

It was finally agreed that the pilot project would occur in the Hardware Manufacturing Plant, and that the work would be duplicated in other plants at the same time, but outside this particular project.

By the middle of the year a project team was appointed and had commenced work on-site at the Company. The team's role was able to be extended by an additional time allocation from another (related) WELL project (State funded) being conducted jointly by the Company and Onkaparinga Institute of TAFE. This allowed individual team members to be available to the Company on a more continuous basis whilst undertaking duties related to both WELL projects. Lines of demarcation between projects often became blurred as team members responded to the needs of the Company.

Work on this project was constantly interrupted by industrial disputes and enterprise bargaining which delayed the initial progress.

Project Steering Committee

The first, and only, full meeting of the Project Steering Committee was finally held on 22 December 1993, although work had begun much earlier and informal working meetings had been held. Membership of the Project Steering Committee included:

Ron Clayton - Business Unit Manager, Hardware
Bob Bolto - Production Staff member, Hardware
Scott Jeffrey - Production Staff member, Hardware
John Fickling - AFMEU (Vehicle Division) Shop Steward,

Hardware
Grace Benvenuto - Ethnic Liaison Officer, AFMEU (Vehicle Division)
Peter Scullion - Workplace Change Adviser, AFMEU (Vehicle Division)
Bob Arnott - VIC Curriculum Writer, MMAL
Ian Ward - Human Resources, MMAL
Robin Sefton - Manager, NALLCU
Rosemary Deakin - Curriculum Planning Officer, NALLCU
Peter Waterhouse - Curriculum Officer (scribe)

The Project Team were in attendance at the meeting:

Project Team

Margie John - Project Coordinator
Phil Anderson - Project Officer
Lynne Simmons - Project Officer

Margie John, the NALLCU Coordinator at MMAL headed up the team of three for this Project. Other members of the team were appointed to start work in July 1993.

Project Brief

The aim of the Project, as outlined in the Project Brief was:

To work collaboratively with Hardware personnel to:

1. develop an overview of an integrated VIC curriculum which incorporates the Hardware Stream, the core knowledge, on-job knowledge and skills, and a framework for implementation in stages;

2. select the first stage (approximately 30 teaching hours) of the integrated curriculum based on the Hardware Stream and core knowledge of the VIC;

3. design, develop, and trial the curriculum and learning materials for the 30 hours Pilot Program, customised to meet the training needs in the Hardware section at MMAL;

4. evaluate the outcomes of the program;

5. adapt the integrated curriculum to two additional streams (60 teaching hours) (MMAL responsibility).

Extract from Project Brief

10.3 Hardware Area

The Hardware Area is located in the Stamping and Hardware plant which is part of Mitsubishi's Tonsley Park complex. The Hardware area manufactures small components to supply the assembly lines in the assembly plants. Its products include items such as fuel tanks, axles, rear bumper bars, oil pans and rocker covers.

There are approximately 130 employees in the Hardware section, they work in two shifts (day and afternoon) which rotate on a fortnightly basis.

Prior to the proposal for the pilot program, the non-trades employees in Hardware had not had any in-house training other than skills training which was delivered in response to the need to introduce quality systems. However some people had participated in training programs delivered outside MMAL, such as a course in robotics offered by TAFE.

10.4 The Development Process

Collaborative Processes

The collaborative development processes involved the project team in extensive consultations with the various stakeholders. As noted above, the pilot program was proposed within a context in which the VIC itself was new to the company. Since there was no established VIC provision it was almost inevitable that the stakeholders' questions, concerns and anxieties about VIC training and its implications would be raised during discussions about the proposed pilot program. In this sense the challenge for the project team became, not merely to "launch" a new approach to VIC training - but to facilitate the "launch" of the entire VIC with a new approach. This was, in many respects, a more substantial task than that facing the project teams in other enterprises.

Every effort was made to keep all players informed about and involved in the development processes. A series of meetings, briefings and consultations involved: management representatives at various levels; union representatives, from state offices as well as local shop stewards; and shop floor employees. These consultations had commenced prior to the appointment of the project team and continued throughout the year as the company moved towards implementation of the VIC and the pilot program.

Throughout all of these discussions the Project Team continued to highlight the importance of developing training curriculum and strategies which would respond effectively to the learning needs of the non-trades employees. In this way, the issues of language, literacy, mathematics and other learning needs of employees were retained at the centre of the development processes. It is important to note that this was itself an important educational process as the Project Team informed the various players about the strategic importance of these issues and discussed strategies to address the needs.

Industrial Relations

It must be noted that whilst these discussions were taking place the company and the union were also engaged in a protracted series of negotiations over a range of concerns which included training issues. The industrial relations climate within the plant was not always conducive to the work of the Project Team and this led to some delays. As Margie John reported:

> *... industrial relations were at a very difficult stage. There was a strike on and there was so much we couldn't do. We were told not to go on the shop floor.* [Eventually] *the language and literacy issue was resolved but there was still no agreement regarding the VIC and time for training. So we still couldn't go ahead.*

When interviewed about the project Ron Clayton confirmed that the industrial relations climate did constrain progress on the project. Whilst the issues under dispute were not a consequence of the proposed pilot program, Ron was concerned that the effectiveness of the program could be compromised if it became embroiled in the industrial dispute. He argued that the pilot program needed to be kept separate from the debate about training issues.

> *I personally asked Margie to put it on hold because we did have industrial unrest and I didn't want this pilot to be seen as part of that mash* [mess of concerns]. *So that somebody could say let's use this as a tool sort of thing. It had to be completely segregated from what we were trying to do.*

Ron was very much of the opinion that the pilot project would best operate under the umbrella of an agreed position on training. Whilst agreement was reached on the issue of paid time for people to undertake separate language or literacy training, the proposal for an integrated approach was constrained because the industrial parties had not reached agreement on the parameters for VIC training.

The Curriculum Focus

Whilst the industrial relations climate was not always conducive to the work, the team continued with curriculum development as best they could. The consultative processes raised a number of possibilities for the focus of the curriculum in the pilot project.

Initially it was thought that the first stage of the curriculum to be developed should focus on Problem Solving. However as discussions continued the issue of Quality came to the fore and the team, responding to the company's wishes, set about developing curriculum materials on quality issues. As the consultations continued, the priority shifted again, this time to issues of Occupational Health and Safety. Again, the team responded to the need being expressed. In the end the team developed some materials to commence training in all three areas.

In each case the materials were developed with several interrelated concerns held in mind. First, the curriculum needed to be workplace specific, relevant, and appropriate to the employees of the Hardware plant. Secondly, the particular modules being developed needed to be seen in the context of the entire VIC program required for the Hardware personnel. Thirdly, the curriculum would integrate opportunities for employees to develop their language, literacy and mathematics skills whilst addressing the knowledge and skills required on-the-job.

Whilst materials were developed to initiate training in several areas the focus on Problem Solving was most fully developed. This unit grew into a 30 hour module for delivery in the pilot program. The content of the Problem Solving module focused on a step by step approach to problem solving which was closely linked to the philosophy and the work practices of the company.

Learning activities were included to promote the development of Key Competencies whilst trainees were simultaneously meeting the requirements for the Hardware plant. The Problem Solving module focused upon particular problems from the hardware plant and the learning activities evolved from these - rather than from some "general" or mythical problems.

For instance, one problem to be investigated concerned inaccurate fuel gauge readings on a vehicle. Whilst working through the step by step problem solving strategy taught in the module the trainees would visit the fuel tank assembly area; observe the particular "roll over jig" in operation and listen to the supervisor explain the process. Later in class they might explain the process themselves through oral or written activities, they may complete a written report or read and discuss graphs or charts relating to warranty claims on faults such as this one.

These sorts of activities, if appropriately facilitated, can provide opportunities not only for solving the particular problem in question, but also opportunities for developing and demonstrating other Key Competencies. Trainees may for instance, demonstrate the use of effective listening skills, show their capacity for working in groups, or develop and demonstrate skills in giving instructions or information to others.

Another part of the challenge for the team was to devise a curriculum which could work with the constraints of the rotating shift times of the Hardware employees at Mitsubishi. The design of the module achieved this through a combination of face to face training sessions and extension activities for trainees to complete independently between classes.

The classes were proposed as 2 hour sessions which would be conducted once each week, with trainees attending for two consecutive weeks. Over the following two weeks, whilst on a different shift, they would work on their self paced activities. During the two week gap between classes the trainees would be able to negotiate time with their trainer for individual language, literacy or mathematics support, or, if necessary, to follow up on questions, concerns or extension activities.

Timeline

The delays over enterprise bargaining negotiations had a substantial effect upon the timeline for the project. At the December Steering Committee meeting there was some discussion on the project timeline. The following extract is taken from the notes of that meeting:

... Enterprise Bargaining processes has delayed developments quite substantially - and these delays have been outside the control of NALLCU personnel. The project has been "put back 3-4 months" due to these industrial negotiations. It was noted that a major outcome of the Mitsubishi experience is the reinforcement of the importance of securing bi-partisan support for the curriculum development processes, through establishment of an enterprise agreement, before the beginning of the project.

[Notes of Project Steering Committee Meeting, 22/12/1994]

The Enterprise Agreement was not established at Mitsubishi and this created considerable uncertainty about the parameters of the project and the viability of proceeding when fundamental issues relating to training had not been resolved.

At the time of the December meeting there were still issues unresolved in relation to VIC training. In particular the issue of time/payment arrangements remained unresolved. Although it had been decided to proceed with the pilot program, it was also believed, on educational grounds, that it would be better not to have a long mid-program break. This would be inevitable if the pilot commenced shortly before the Christmas New-Year holidays. For this reason the delivery of the training was postponed until the New Year. At time of drafting this report the pilot program had not been trialed.

Links to other Projects

One of the factors shaping the developments at Mitsubishi was the co-existence of other initiatives being funded through the WELL program at the state level. These initiatives were being developed with Onkaparinga Institute, (formerly Noarlunga College of TAFE). Margie John as the key TAFE consultant/lecturer involved in these initiatives was thus in the situation of juggling different projects and priorities within the one enterprise. There were some advantages in this as one project reinforced or contributed to another. Also Margie's joint responsibility for these projects gave her a full-time commitment at Mitsubishi which would not have been possible otherwise.

Her professional input, along with that of the other project team members, was available to the company on-the-spot. The team immersed itself in the company and its culture and was committed to responding to the needs as they unfolded. However as Margie pointed out in an interview about the project there were;

> *... no lines, no boundaries on the shop floor which clearly said which project should be supporting which initiative. If something needed to be done and I was there, I couldn't sort of say, "Well, I'll do that tomorrow when I'm wearing my other hat." It just wouldn't make sense.*

As the team worked at Mitsubishi the objectives of the original pilot project brief became somewhat lost in the challenges of designing, developing and implementing VIC training strategies across the company. They were not entirely lost however. In some respects the WELL projects were welded together by circumstance. The team's work with the company on curriculum design and development, on assessing learning needs and on training trainers benefited from this pragmatic response to the situation.

10.5 Observations & Reflections by Peter Waterhouse

The following themes emerged from the interviews that were conducted.

Unanticipated Outcomes

Whilst the outcomes of the Mitsubishi project were not those anticipated in the project brief it would be a mistake to dismiss the project as a failure. Indeed the high level of excitement and energy which was evident at the December Steering Committee meeting was testimony to the considerable progress which had been made. Management and union representatives as well as the workplace educators present were quite positive about the developments which had taken place and the prospects for 1994.

The original brief proposed development in one area (Hardware Manufacture) of the company. This project did not progress as far or as quickly as originally proposed, although progress is still expected in 1994.

However the educational influence of the Project Team within the company and their multiple discussions with the many stakeholders, in relation to the pilot, have had a much broader influence than anticipated. The developments at Mitsubishi have occurred across a much wider front than originally planned.

Whilst the pilot project has not yet been trialed, many of the ideas implicit in the proposal have been taken up by the company for much wider application in its training and development programs. The company now has a commitment to addressing its employees' language, literacy and learning needs in a way that would not have been possible without the work of the Project Team.

Involving Players in the Issues

When interviewed about the project, Rick Wilson, Manager Planning & Coordination, stressed the extensive consultations which had been involved. Not only had the *"union been involved all the way through"* he said, but discussions had been held with all key players including area managers and supervisors. Rick commended the work of the Project Team and, in particular, Margie John, without whom he felt the work would not have been possible;

> *... it is essential to have the coordinator at enterprise level to implement the integrated program and develop the training materials so that they accurately reflect Mitsubishi's jargon.*

Rick felt that the work by the Project Team had brought to the company a valuable new perspective which highlighted the importance of *"understanding employees needs as individuals"*. He argued that this approach was essential for training to be effective across the organisation.

In particular Rick felt that the project's focus on work with supervisors was very important. These people he suggested are the *"missing link"* in endeavours to bring about change on the shop floor. He suggested that the project has played a significant role in up-skilling supervisors and in re-orienting them to a role which is less traditionally task-focused and more people and training focused.

Ron Clayton also cited the involvement of shop floor people, and in particular the supervisors, as one of the key factors in the success of the development work.

> *... it couldn't be from a top down direction, it had to be from the bottom-up. We realised that the whole key player in it was the supervisor, 100% from the supervisors. And this is where a lot of time and effort and explanation was put forward to these people, the supervisors, to let them have a full understanding of what it meant to them. ...they came up with what their needs were within the areas and they also had a very good idea of what skills and training people needed. ... and this is how it really got developed, from the supervisors, ...*

Scott Jeffrey felt that the Project Team's professional skills in dealing with adults who were nervous or apprehensive about training or returning to study were extremely important in involving people in the development processes.

> *I think if we'd done the talk, we would have done our best, but I think we would have come across a bit as if you need some help because you are a little bit deficient... Well people would have been a little bit negative about that and reluctant. Well the way they* [the Project Team] *put it across it was extremely good and we just had bits of paper coming out our ears with people putting their hands up and wanting to get support. There was no stigma attached to anyone. It was quite surprising, especially with some of the older people too. ... The educators have got those skills, we haven't got the skills or understanding of how to handle people... in that regard.*

Union representatives also commended the way the project team involved all stakeholders and developed effective consultation processes. Grace Benvenuto noted the importance of the team's ability to consult *"with all parties at all times"*. Grace also stressed that effective consultation takes time:

> *I think a lot of the time up to now* [December '93] *and probably the most consuming time of the project, is in that consultative process with all of the parties. Certainly time needs to be devoted to that in any project if it's going to succeed.*

Peter Scullion reinforced this point and noted the importance of the Project Team not only consulting and involving all key players, but also maintaining a position which is independent of the company-management position. Peter argued that some TAFE people "seem to be out of touch". This he suggested was not a problem with the Project Team, speaking of the Project Coordinator he noted;

> *... she really communicates well, ... Margie has been excellent, exceptional in that sense, she talks to the local shop steward, but she also rings into the State office.*

This ability to involve all stakeholders and maintain a clear educational focus was a key factor in promoting engagement and involvement in the project.

Generating Interest & Enthusiasm

As noted above, a striking feature of the mood evident at the December Steering committee was the enthusiasm and interest generated by the project. After extensive consultations and repeated rounds of negotiations there was a feeling that the implementation of the VIC and the pilot program were at last going to address the concerns which had been identified.

During December a number of factors within the company, including the presence of surplus labour in the main assembly plant, combined to produce a burst of activity directed at the implementation of VIC training. The extensive background and preparatory work undertaken by the project team was one of the contributing factors in this development.

Rick Wilson put it quite dramatically when he compared the interest and enthusiasm to a fire which had been lit and was now in danger of burning out of control. Rick stressed that he did not want to extinguish the fire, or dampen the enthusiasm which it had taken months to build.

Ron Clayton also noted the importance of nurturing the developments occurring towards the end of 1993.

> *We really need to kick it on now, because we cannot stop. These people have expectations now, they can see the benefit for themselves plus probably for the company. But it has to move forward and if we put any delays in there well we are going to lose them and that would just destroy it.*

John Fickling, AFMEU (Vehicle Division) Shop Steward from the Hardware line expressed the sense of expectation on the shop floor. He related the new initiatives in training to broader concerns for workplace reform and multi-skilling. However his comments suggest the potential for the integrated model which addresses the needs of diverse stakeholders. The company can benefit through multi-skilled workers, the workers may benefit through enhanced career pathways, genuine learning opportunities, and as John notes, more interesting work.

> *... both the company and the workers want to be multi-skilled and a more efficient workforce. The more people trained in skills and knowledge then the company can progress. I mean the whole industry has been a boring industry for so long. A person who has been employed as a spot-welder, a press operator or whatever, well he* [sic] *could be there for the rest of his life. Well since this certificate has come into place well people can progress again, ... we've needed this for a long time you know.*

When asked specifically about language, literacy and learning needs, John stressed that the union had identified these issues of concern long ago - *"we've been pushing that for years and years"*. However he was confident that the approaches being developed at Mitsubishi were an effective response to the learning needs on the shop floor. On *"that side of it"* he was pleased with the way management, and indeed all the key players, had cooperated.

> *Oh, more than happy, the cooperation that's taken place is unbelievable you know, ... I can't believe how things are going ahead.*

Overall, there was a strong sense of energy and enthusiasm towards training; and more specifically, training designed to address language, literacy, mathematics and learning needs within the context of the VIC. This interest and enthusiasm for training represented a substantial shift in the status and position of training within the company. Whilst it is too early to be definitive, the evidence of these attitudinal changes suggests the beginnings of a new learning culture within the company.

Curriculum Development - Problem Solving

The development of the curriculum materials, in particular those for the Problem Solving module, are a valuable outcome of the project. These materials, although not yet trialed, have been developed through collaborative processes. There are strong indications that the stakeholders, from management through to the shopfloor, and the state office of the union, have a strong sense of commitment to the curriculum development processes demonstrated through this approach and to the curriculum materials emerging from the development processes.

The focus of the integrated model, on developing Key Competencies simultaneously with specific workplace competencies, sets a valuable precedent for the development of subsequent VIC materials as the company moves into full stride in implementing the VIC.

Shaping Enterprise Strategy

The sense of things "going ahead" at Mitsubishi, as noted by John Fickling above, was one of the major outcomes of the project. In particular, Margie John and Rick Wilson reported that the proposed pilot program was a major influence on the company's development of it's VIC implementation strategies. Margie and her team's approach was to listen and consult.

Grace Benvenuto noted the importance of this subtle and non-threatening kind of leadership.

I think Margie's done a lot of work in terms of actually developing the plan, in terms of the whole model for Mitsubishi, the language and the literacy and how it fits in, the VIC and everything. I think she's been at the forefront, along with her team, of developing that for the company. ... I think she's incredibly skilled in that respect.

Scott Jeffrey noted that the approach being developed was a departure from previous training practices within the company.

... we're going to benefit by having people who know both the literacy and numeracy aspect as well as the training. We know the training aspect and I think that's possibly where we've fallen down. We have actually run a pilot with the Problem Solving [module] *back in February, or March, ... but not really taking into account the aspect of numeracy and literacy or learning to learn ...and ... it could have been a lot better if we'd had the help at that stage.*

Ron Clayton also noted the significance of moving towards more integrated training strategies.

[Before]*we wouldn't even take that into consideration, we would say somebody's going on a training course; here's your bit of paper, ... assume they're happy, assume they can handle it.... the stress and the problems could build up for that person... You could get a failure straight away, and then you get resentment ...*

There is evidence in this interview with Scott Jeffrey and Ron Clayton, of the subtle shifts which were taking place in their understandings of training and learning issues.

Historically, even well-intentioned training programs usually failed to bring about any sustainable change on the shop floor. It seemed as if there was no effective connection between the training and real shop floor experiences, no conscious link between learning and change.

When asked whether the learning was really connecting with shop floor experiences Scott replied;

Well, no, no it wasn't. A lot of it had been segregated. You go up to Admin., you do your session, then you come back to the shop floor and maybe it doesn't get implemented.

The comments above, coming from a management perspective, were echoed in the interview with union representatives. As noted above, the union appreciated the leadership offered to the company by the Project team. The union also expressed support for the approaches being developed:

... the whole philosophy of the integrated model, ... I think it's a really practical and interesting way of providing learning. I've spoken with lots of people who have said "Don't just give me theory because it's so boring and I can't apply it to anything." I think the integrated model certainly fits with the idea of knowledge being applied to the workplace.

Peter Scullion, who made the comment above, also stressed the strategic, political and industrial importance of training and the curriculum development processes preceding training.

... the career path is determined by training and therefore by the curriculum. So you can't get a wage increase any more unless you get training and unless there's curriculum development. So it's very important for us.

He felt that the integrated model moved training away from traditional approaches.

... generally training has been divorced from the workplace but the integrated model makes it more relevant, as it addresses the issue of literacy and language. Literacy and language used to be separate, whereas this model says literacy and language questions are addressed and resolved in your curriculum, in your VIC. I think it's very good.

In summary the work of the Project Team, with Mitsubishi personnel, appears to have had a substantial effect in promoting the development of new approaches to training. On the one hand a whole new dimension has been added to the training. This new dimension is taking account of individual learners' needs within the context of mainstream training; including attention to language, literacy, numeracy and study skills. On the other hand there is an improved recognition of the importance of making the links between training experiences and shop floor realities.

As Scott Jeffreys summed up;

While we still tried to do that before we probably didn't have the understanding of these people's needs, our workforce, and we probably didn't take as much care and effort to make sure that happened.

10.6 Conclusion

It is apparent that even without the conduct of the proposed pilot program there has been a substantial and significant shift within the company. The move is away from a deficit model of training which discriminates and creates disadvantage; it is a move towards linking training more effectively to changes on the shop floor. It is a move towards more integrated strategies for addressing learning needs.

As indicated in an MMAL Language/Literacy Training Report, MMAL has recognised the necessity to integrate language and literacy training into the total training program for all levels of employment.

Chapter 11
Integrated Training at
Nissan National Parts Distribution Centre (NPDC)
Dandenong, Victoria

I was down in our Receiving Department the other day and there was one guy down there, in his lunch hour I might add, with his head in a book. "What are you doing?" "Oh, this is part of the course I'm involved in." he said ...

Tim Duncan
Materials Manager

11.1. The Context at Nissan NPDC

Since the closure of its manufacturing plant in Clayton, Victoria, in October 1992, Nissan fully imports its vehicles for sale in Australia. Head Office, the Castings Plant and the National Parts Distribution Centre (NPDC) are located in Dandenong, Victoria. Other Parts Depots are situated in NSW, WA and Queensland.

The Company focus, typified by the "New Nissan" advertising campaign, is on providing the best service and car sales support in the automotive industry. Against this background the NPDC plays a crucial role in supplying parts locally, interstate and for export. Its employees (63 in the warehouse and approximately 40 in the office/administration area) are responsible for the dispatch of goods worth approximately $10 million per month on the retail market. A great deal more is held in storage.

In February 1993 a new computerised system of control was introduced by the Company - Nissan Automotive Parts System (NAPS). This was intended to facilitate the implementation of more streamlined work practices.

Training at Nissan NPDC

With the closure of the manufacturing plant at Clayton, the Nissan Training Department also ceased to operate. However, although certain resources no longer existed as they had, the company retained a commitment to the training function and to training processes. Industrial negotiations at the NPDC had ensured that a skills matrix was developed for a system of training and recognition for on-the-job skills for the VIC that gave people access to pay rises to a certain level within the Company. However, a wages ceiling was created that meant that employees in the warehouse could not access any higher wages until completing the knowledge units of the VIC. The company approached NALLCU to discuss the possibility of becoming involved in an integrated training pilot project for the off-the-job component of the VIC specific to the warehouse.

Industrial Training Agreement

The pilot project took place within an agreement negotiated between the company and the union. David Ablett, Education Officer with the AFMEU (Vehicle Division), noted that negotiations with the company on training issues were protracted and had begun as early as 1992.

By the time discussions were initiated on the pilot project some issues were still not resolved. On the one hand, the union sought to establish an agreement which offered its members similar conditions to those established for training in other companies. On the other hand, the company needed to be convinced of the value of the training and was reluctant to enter into any long term training arrangements until after the completion and evaluation of the pilot project.

The agreement which was reached provided a basic framework for the development and delivery of the pilot program. However it did not go beyond the pilot and some key issues in relation to VIC training were not resolved. Despite some continuing disagreement, the parties agreed to an interim industrial agreement to allow the pilot project to proceed. Under this interim agreement, full-time employees involved in knowledge training were to contribute one hour of their own time for each two hours of company time. Slightly different conditions applied for part-time employees. It was also agreed that those employees who had completed their skills training would be given priority for placement in the pilot program. The pilot was conducted under these conditions.

The start of the project was delayed pending these negotiations. Then when the first meeting was held on 4 August, the project was delayed for a further two weeks until the employees ratified the agreement. The Project Officer eventually started work on the project on 18 August 1993.

11.2 Establishing the Project

Tripartite Steering Committee

As was the practice with each of the pilot programs, a tripartite steering committee was established. At Nissan the membership of this committee comprised:

Paul Willigenburg - Manager of Distribution, Nissan NPDC
David Lloyd - Manager of Personnel, Nissan NPDC
Alan Barlow - AFMEU Shop Steward (Vehicle Division), Nissan NPDC
Denise Oakley - Outer Eastern College of TAFE
David Smith) - Work Change Adviser, AFMEU
David Ablett) (Vehicle Division)
Robin Sefton - Manager, NALLCU
Rosemary Deakin - Curriculum Planning Officer NALLCU

Peter Waterhouse - Curriculum Officer, NALLCU

In Attendance:

Ann Eller - Project Officer

Project brief

The project brief was given in-principle approval at the Steering Committee meeting on 4 August 1993 and subsequently adopted at the September meeting, following minor amendments. The brief stated the aim and objectives of the project:

> To develop an overview of the VIC as it applies to the Nissan NPDC, integrating the knowledge and elective units.
>
> To design, develop, trial and evaluate an integrated training model which:
>
> - is specific to Nissan NPDC at Dandenong,
> - focuses on the warehouse operations in the context of the VIC;
> - evolves through a process of active participation, consultation and collaboration between management, employees and union representatives.

The brief further outlined more detailed objectives of the project and the respective roles and responsibilities of the players. It was agreed that the pilot project would focus on the development and trial of the first 40 hours of the curriculum. However there was a clear understanding that these 40 hours would be designed as part of a fully integrated program which would embrace the whole of the VIC knowledge and the warehousing elective unit for Nissan employees.

Project Team

The project team was established with Ann Eller employed as the Project Officer for two days per week by NALLCU. Robert Yates, from Outer Eastern College of TAFE, joined Ann for the delivery phase and to assist with the modification of curriculum as a result of the pilot program.

Ann Eller came to the project with considerable background experience in warehousing systems and practices gained from researching and teaching the HEC VIC warehousing elective unit. This provided an invaluable background to the Nissan project.

11.3 The Nissan National Parts Distribution Centre

The NPDC is the central depot which supplies parts and accessories to local customers via its dealership network as well as interstate to Nissan depots. The

NPDC and the subsidiary interstate warehouses are vital links in this process. Efficient supply of parts is especially crucial as the company no longer manufactures and assembles cars in Australia. The operations are supported by several administrative departments including parts logistics, accounts, parts procurement, sales and marketing and dealer development.

The distribution centre has two warehouses: the first opened in 1982, the second in 1992. The second warehouse, at 11,500 square metres, is the smaller of the two storage areas. It has the capacity for 12,500 standard size pallets. Over 17,000 lines, totalling in excess of 700,000 pieces, are received here each month from Japan (NML) and local suppliers. This area also holds the reserve stocks in high rise storage. The 14 employees (including part time operators) who work in the receiving, unboxing, packaging and replenishment sections, usually remain in their specific locations, however rotation occurs when staff are absent.

The remaining 49 full time and part time staff bin, pick and dispatch the parts and accessories in warehouse 1. Large and medium sized items are binned, or stored, in high rise storage. When dealers took over (from distributors) the prime responsibility for distribution of parts, a greater number of smaller orders were requested. The warehouse was re-organised by 1992 to include a mezzanine section, with a conveyor belt, to accommodate this increased demand. About 70% of activity is in this area, where hand picking was found to be more efficient than using automation. Routine orders,local and interstate, are despatched daily, supplying on average over 77,000 lines (totalling over 628,000 pieces) per month. A local carrier collects urgent orders three times daily to service high priority requests from metropolitan dealers. These statistics exclude the daily transfers to interstate depots.

The on-site operations of the two warehouses are overseen by the manager and/or warehouse coordinator. Leading hands supervise the operators in the various sections. The ten shifts, beginning at 7.45 am and ending at 9.00 pm, are rostered according to the times of peak parts movement. Most staff in the second warehouse start at 7.45 and finish mid-afternoon. More flexibility is required in the despatching warehouse where there can be fluctuating customer demand for parts.

11.4 Developing the Program

The Parameters for Curriculum Development

The brief was to design a pilot program of approximately forty hours (ten of which would be out-of-class) to provide an overview of the NPDC warehouse and to be the first stage of the VIC in anticipation of the pilot program being extended to include the whole of the VIC.

The original VIC Warehouse Syllabus of 30 hours reflected only a few aspects of the total operation of the Nissan warehouse. An overall curriculum framework needed to be developed to extend the elective component to 60 hours and to incorporate the VIC core of 140 hours.

Ten days were allocated to the task of analysing the training needs on the shop floor, as well as the collaborative design and development of the program. This timeline was re-negotiated and extended, giving an extra few weeks for this phase. Given the nature of the task and the importance of collaboration with the Nissan workforce, on-going research and development has occurred parallel to the implementation of the program.

The training program incorporating the 200 hours of VIC knowledge units was based on Nissan's workplace systems and continued to be developed in 1994.

Collaborative Curriculum Development

Nissan has been undergoing continuous change in recent years. Reduced staff numbers, the introduction of NAPS and ten different shifts have had a significant impact on the work practices and culture within the NPDC.

The curriculum development process involved extensive collaboration with NPDC operators and managers, including discussions with and ongoing observations of operators in the various sections. Employees, managers and personnel from principal departments were invited to contribute to the curriculum and program content. Establishing working relationships with NPDC had a very high priority throughout all stages of the program. Working from a small office in warehouse 1 made the process easier.

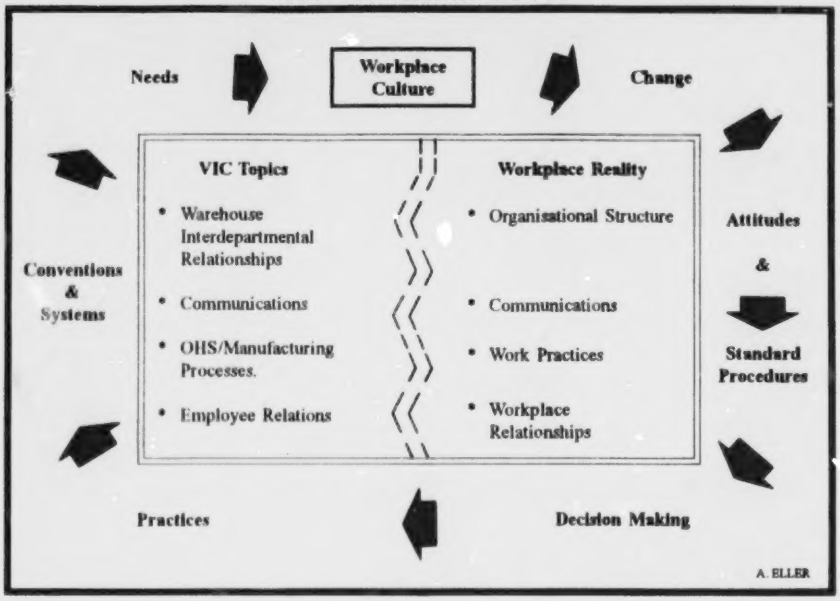
During consultation, the importance of particular themes emerged:

- Interrelationships between the various warehouse sections;
- Relationships between the warehouse and the administrative departments;
- The "next customer" principle;
- Quality control;
- Continuous improvement.

Overall, the curriculum development was the responsibility of the project officer, however, the process benefited from also having the input of NALLCU staff during the crucial stage of developing a cohesive program outline. The VIC core units and the warehouse elective syllabus had to be shaped to incorporate workplace requirements. Three curriculum sessions between the project officer with other NALLCU staff assisted in designing the curriculum.

The project officer was aware of the need to be sensitive to the multitude of pressures which operate in the workplace. It was important to understand the reality of day to day organisation within its wider context. Figure 8 illustrates the interface between workplace reality and some VIC topics. Developing curriculum with this focus, therefore, has to take account of the cultural milieu, attitudes, work ethic, procedures, systems and conventions.

Fig 8 Customising the VIC


Needs
Workplace Culture
Change
VIC Topics
• Warehouse Interdepartmental Relationships
• Communications
• OHS/Manufacturing Processes.
• Employee Relations
Workplace Reality
• Organisational Structure
• Communications
• Work Practices
• Workplace Relationships
Conventions & Systems
Attitudes & Standard Procedures
Practices
Decision Making
A. ELLER

As a result of the on-going collaboration with NPDC employees and staff, Unit 2 was modified part way through the program to incorporate a reciprocal visit with dealership personnel. The managers from the Warehouse, the Dealer Development, and the Customer Support departments were actively involved in the preparation for and conduct of the visits to the dealerships. Similar involvement occurred with the Materials Department for the supplier visits.

Although not involved in the initial stage of curriculum development, Robert Yates from Outer Eastern College of TAFE joined the project once classes started and assisted with trialing, evaluating and revising the curriculum.

Profile of the Participants

This was the first time that many of the employees had undertaken any ongoing or lengthy training. Certainly it was their first opportunity to do so at NPDC.

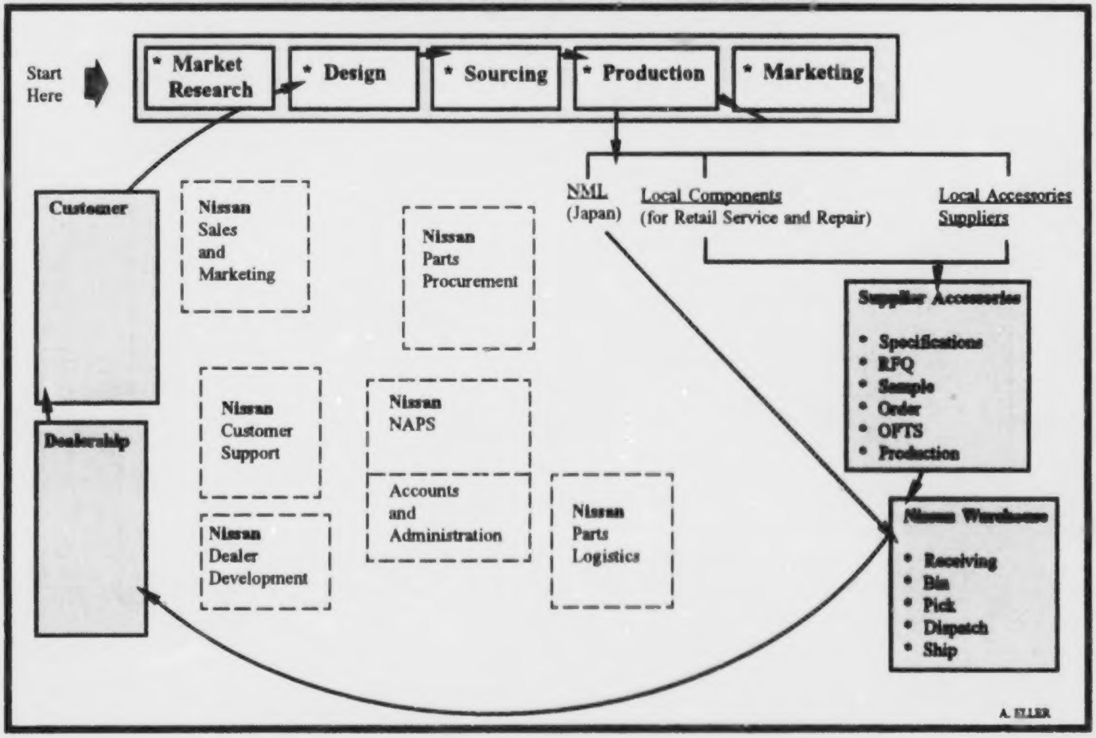
The collaborative process of curriculum development provided the project officer with valuable insights into the skills, experience and potential of many employees, including those in the pilot program. Operators obviously had adequate skill to do their own work, although the requirements of the recently introduced NAPS (computerised) system added new dimensions to that work. The NPDC operations require the active use of the NAPS system by all operators. This system includes computer screen displays and print outs, and a complex ticketing system and is supported by documentation such as invoices and requests for adjustment, and extensive formal and informal communication systems.

Participants had varied prior qualifications and work experience, including: qualifications in trades, experience as Nissan production plant assembly workers, in warehouse operations with other companies and general work in other industries and workplaces. The pilot group ranged in age from the mid twenties to the mid fifties and many had not been involved in formal accredited training/education for many years. The group included employees of both non-English speaking background and English speaking background, with a diverse range of language skills.

Curriculum for the Pilot Program

The flow chart in Figure 9 provided a reference point for focusing the learning in context. This chart was an adaption of an original concept designed by Toni Roberts of NALLCU for the Ford NPDC project. The outer circle describes the design, production and movement of parts from market research to their final destination, the customer. The inner circle can be traced to show the administrative departments within the NPDC which support the distribution of parts and accessories. This flow chart was used to contextualise each unit of the program, to extend and revise trainee knowledge and to identify and record the key features and interrelationships between sections and processes within the system.

FIG 9 OVERVIEW OF THE PRODUCTION PROCESS 1993


Start Here
* Market Research
* Design
* Sourcing
* Production
* Marketing
NML (Japan)
Local Components (for Retail Service and Repair)
Local Accessories Suppliers
Customer
Nissan Sales and Marketing
Nissan Parts Procurement
Supplier Accessories
• Specifications
• RFQ
• Sample
• Order
• OFTS
• Production
Dealership
Nissan Customer Support
Nissan NAPS
Accounts and Administration
Nissan Dealer Development
Nissan Parts Logistics
Nissan Warehouse
• Receiving
• Bin
• Pick
• Dispatch
• Ship
A. ELLER

BEST COPY AVAILABLE

The following pages provide an outline of the curriculum developed for Stage 1. The sequence is developmental, moving from relatively personal, concrete experiences to those which are more complex and abstract.

Unit 1 Work and the Warehouse - 9 Class Hours

Outcomes:

1. an overview of the warehouse operations
2. an understanding of how the individual job relates to the parts receiving, storage and distribution processes

Content:

1. **Job Analysis**
   - purpose of job
   - tasks and sub tasks of job
   - skills, attitudes and knowledge of job
   - OHS issues, formal, informal and electronic communication systems, transport and equipment used

2. **Warehouse Operations**
   - parts movement from receiving through to shipping
   - layout of sections within the warehouse
   - Just In Time, Incoming/Outgoing Materials, elimination of waste
   - interdepartmental relationships

Activities:

- on site observing of own work area/note taking
- constructing flow charts
- presenting material to group
- explaining job to partner
- mapping warehouse layout

Integration of Key Competencies (Mayer):

- working in pairs, small/large groups to achieve a common goal
- expressing: ideas from personal experience; complex ideas in familiar situations;
- analysing, selecting and organising information
- planning and organising class activities
- identifying common workplace problems; suggesting possible solutions

Communications:

- writing: job profile; answers to questions about on site observation; flow charts of job processes/warehouse operations
- explaining job to partner
- presenting material to class
- reading: Nissan source material (memos,tickets); brochures on Health & Safety legislation, history of automotive industry.

Unit 2 Context of NPDC Operations- 24 Class Hours

Outcomes:

1. an overview of the total NPDC operations including where parts come from and go to
2. an understanding of the principles of "next customer", Just In Time, and quality control as they apply to the NPDC, its suppliers and its customers

Content:

1. **Supplier Visit**
   - Parts purchasing and materials supply
   - AMPAG policies
   - ordering principles
   - quality issues of right part, right quantity, right time
   - OHS practices, communication systems, transport/equipment used
2. **Dealership Visit/Reciprocal Visit**
   - dealership network/parts and accessories distribution system
   - organisational structure of dealerships and interrelationships between departments
   - common problems experienced by dealerships (Parts and Accessories)
   - NPDC workplace practices and their impact on dealerships (P & A)
3. **Common to Both Topics**
   - function of relevant Nissan administration departments which support parts movement from supplier through to final customer
   - Nissan policies and procedures in relation to suppliers and dealership network
   - examination of parts storage and distribution system in other companies
   - examination of technology/computer systems

Activities:

- Local Automotive Supplier: tour of supplier, including on site observation & note taking
- Dealerships: visit to dealership, including interviewing Parts & Accessories Manager
- Reciprocal Visit: hosting reciprocal visit of dealership (P & A) personnel, including demonstration of job
- Guest Speakers: listening to, & participating in discussion with, two Nissan department managers
- constructing flow chart of parts movement from warehouse to dealership
- constructing cause, effect, and possible solution charts of operational problems experienced in the warehouse

Integration of Key Competencies (Mayer):

- collecting data and incorporating information for verbal/written presentations
- negotiating respective roles within small/large group
- working in pairs, small/large group
- using percentages

Communications:

- interviewing dealership personnel
- conducting tours of NPDC, explaining specific jobs
- reading class material on: organisational structure of dealerships; Bosch company literature
- reporting back to group on information gathered on visits
- writing: evaluation of class material; notes; simple reports on visits
- terminology: dealer principal, sourcing, request for quotation, original engineering,

Unit 3: NPDC Operations in the Wider Context - A Review (3 Class Hours)

Outcomes:

- understanding of the "Button Plan"
- overview of the vehicle industry

Content:

1. **The "Button Plan"**

   - profile of the vehicle industry in 1980s
   - purpose of plan
   - key strategies of plan-local content, fewer models, export facilitation, quotas, lower tariffs, fewer producers
   - Automotive Industry Authority

2. **The Vehicle Industry**

   - Plan producers
   - local content
   - vehicle industry sectors

Integration of Key Competencies (Mayer):

- working in small/large groups
- expressing ideas from personal experience
- analysing information and relating it to personal experience

Activities:

- class discussion
- small group work

Communications:

- writing short written responses to questions
- reporting back small group findings to class
- reading class handouts on Button Plan and Vehicle Industry

The program provided the opportunity to develop knowledge and skills through experiential learning - work-based activities, excursions, group work, project and oral presentations and similar activities. It satisfied the needs of the workplace, included relevant VIC units, and placed NPDC in the wider context of dealerships and the automotive industry.

The Training Matrix shown in Table 9 indicates the relationship between the learning outcomes of the VIC syllabus and those of the Nissan program. It illustrates how learning outcomes are developed and reinforced over time.

TABLE 9 NISSAN NPDC - VIC PILOT PROJECT TRAINING MATRIX

NISSAN UNITS	Unit 1 Job Analysis & Warehouse Operations	Unit 2 Supplier Visit Dealership Visit	Unit 3 Course Review Vehicle Industry	Learning Achieved
VIC MODULE (UNITS)				
Core				
1. Occupational Health and Safety				
C1.1 Roles and Responsibilities	✓			Yes
C1.2 Accident Investigation Reports	✓			
C1.3 OH&S Award	✓			
C1.4 Personal Protective Equipment	✓			Yes
C1.6 Hazardous Material	✓			Yes
C1.7 General Signs and Codes	✓			Yes
C1.8 OH&S Issues	✓	✓		Yes
3. Communication				
C3.1 Communication Models	✓	✓		Yes
C3.2 Communication in the Workplace	✓	✓		Yes
C3.3 Influencing People	✓	✓	✓	Yes
C3.4 Non-Verbal Communications	✓	✓		Yes
C3.5 Active Listening	✓	✓		Yes
C3.6 Giving Information	✓	✓	✓	Yes
C3.7 Giving Instructions and Feedback	✓	✓		Yes
C3.8 Effective Listening Skills	✓	✓	✓	Yes
4. Manufacturing Processes				
C4.1 JIT	✓	✓		Yes
C4.2 Incoming/Outgoing Material & Stock Minimisation	✓	✓	✓	Yes
C4.4 TQC - Factors Influencing Quality	✓	✓		Yes
C4.5 TQC - Key Elements and Processes	✓	✓		Yes
C4.6 TQC - Measuring Quality		✓		
C4.7 Principles of the Elimination of Waste	✓	✓		Yes
C4.8 Continual Improvement	✓	✓	✓	Yes
5. Job Instruction				
C5.1 Introduction to Job Instruction	✓			Yes
C5.2 Task Analysis	✓	✓		Yes
C5.3 Demonstration Techniques		✓		Yes

NISSAN UNITS	Unit 1 Job Analysis & Warehouse Operations	Unit 2 Supplier Visit Dealership Visit	Unit 3 Course Review Vehicle Industry	Learning Achieved
VIC MODULE (UNITS)				
6. Groups in the Work Place				
C6.1 How Groups Work	✓	✓	✓	Yes
C6.2 Characteristics of Effective Groups	✓	✓		Yes
C6.4 Goal Setting	✓	✓	✓	Yes
C6.5 Group Decision Making	✓	✓	✓	Yes
C6.6 Overcoming Common Barriers for Group Effectiveness	✓	✓		Yes
7. Vehicle Industry				
C7.1 Concept of the Vehicle Industry		✓	✓	Yes
C7.2 Industry Controls			✓	Yes
12. Elective Warehousing				
E12.1 Inter-departmental Relationships	✓	✓		Yes
E12.2 Warehouse Layout	✓	✓		Yes
E12.3 Total Services	✓			Yes
E12.4 Bin Planning	✓	✓		
E12.5 Bin Capacity	✓			
E12.6 Storage Equipment	✓			
E12.7 Locations	✓			
E12.9 Damaged Goods	✓			
E12.10 Inventory	✓	✓		
E12.17 Limitations		✓		
E12.18 Automotive Suppliers	✓	✓	✓	
E12.19 Automotive Dealership	✓	✓	✓	

Material not covered in existing VIC Syllabus which was covered in Pilot Project.

- Supply
- Receiving Stock
- Orders
- Picking
- Shipping
- Dealers
- Replenishment

11.5 Program Implementation

Participation in the Program

As employees became involved in the process of collaborative development, the list of potential trainees grew to over forty warehouse operators from an initial core of seven leading hands. In all, 63% of the warehouse employees expressed an interest in participating in the pilot program. Not all operators were able to attend at that stage because of the industrial agreement giving preference to those employees who had completed their skills training. The pilot group consisted of 25 employees in two groups. One class mid morning and one in late afternoon overcame the problems of having ten shifts.

The sessions took place in the training room where resources and space allowed for small group work and oral presentations. Having a regular venue helped the trainees to establish group cohesion and create a dynamic formal learning environment.

The first of six classes began on 27 October. Robert Yates, was involved in observing and participating in the first group which was taught by Ann Eller. He then facilitated the second group, the classes for which were staggered one week apart to allow for ongoing curriculum development and review. The modifications arising from the first class were incorporated into the material for the second group, the following week. After the Christmas break, Ann facilitated the remaining six classes for both groups, as Robert could not continue due to other commitments.

Staff managers, and other administrative personnel participated in and attended a number of class activities, for example, the arrangements for the visits to Bosch and the five dealerships were undertaken jointly by Nissan management and the Project Officer. Initial liaison with Bosch and dealership personnel was undertaken by Nissan management, using the necessary background material which had been prepared by the Project Officer. Transport on the day was organised by Nissan.

These excursions provided opportunities for management to develop an understanding of the program, to show their support for training and strengthen contacts with their customers.

Learning Experiences and Strategies

The development of language skills (including literacy and numeracy) was an integral component of the training. This section highlights some of the language learning experiences and strategies used in stage one of the project. The skills developed during this stage formed the basis for more analytical research, writing and presentations to be undertaken later.

Building on and extending existing language concepts and skills was essential to achieving the learning outcomes, and to developing the particular language skills needed for research based activities, for example:

- identifying and discussing key issues;
- analysing and synthesising information (relationships networks, systems);
- classifying and categorising information;
- identifying cause and effect relationships;
- formulating questions;
- constructing schemata;
- developing a framework of ideas/terminology/language concepts;
- communicating ideas and information in various forms;
- developing a language facility for different contexts;
- processing data and presenting information in various forms (graphs, charts, inventories, schedules);
- planning and organising activities.

The development of these language and literacy/numeracy skills was combined with the development of appropriate interpersonal and group behaviours, for example relating to and working cooperatively with others in groups and using group strategies (team work, goal setting, negotiating).

The following sequential sessions relate to the dealership and reciprocal visits (Unit 2) and give some insight into how the learning outcomes were achieved in activities related directly to work place practice and meeting customer needs.

1. Preparation for dealership visits (including interviews);

2. Small group visits to Parts and Accessories (P&A) departments/sections of selected dealerships;

3. Review of visit;

4. Preparation for reciprocal visit of dealership personnel;

5. Reciprocal visit of dealership personnel to NPDC

6. Review of reciprocal visit

The assessment criteria required the trainees to construct a profile of the dealership organisational structure (network, relationships, operating principles and practices) and the interrelationship between NPDC and dealership policies.

The skills underpinning this experience included:

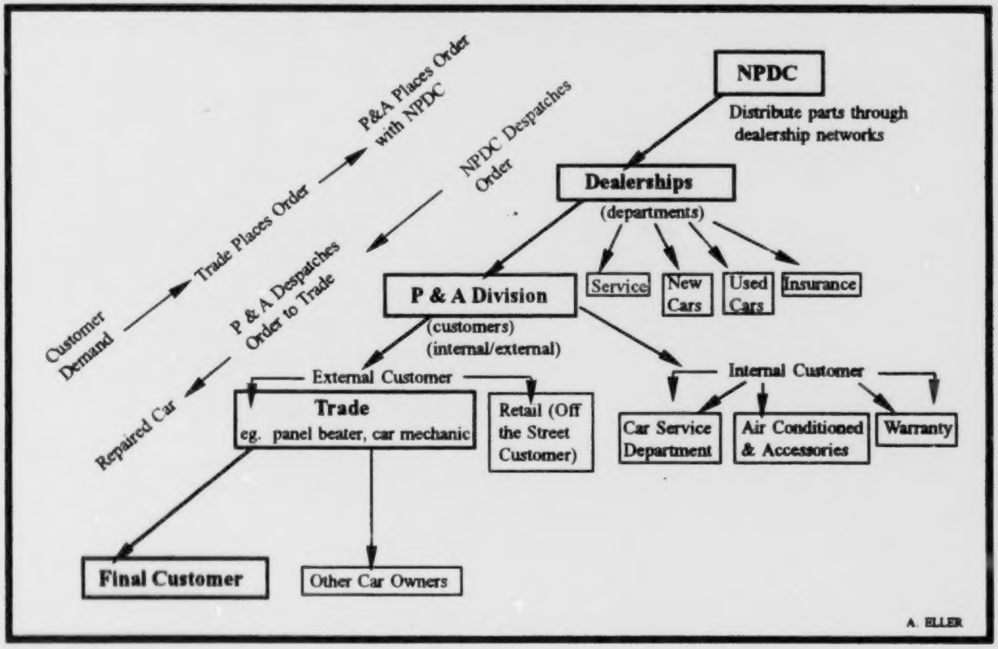
- identifying key issues to be researched at the dealership and reciprocal visit, (including construction of interview questions);
- demonstrating appropriate behaviours and interview techniques and understanding of company protocol during dealership visits;
- analysing and synthesising information from the visit in a group report and data chart, and negotiating the form of the group chart.

The following concepts underpinned the learning experience:

- Dealership franchise;
- Internal organisation of dealerships;
- Role of dealership in relation to NPDC;
- NPDC departments which support dealership network;
- Policies relating to dealerships (rebates, target and stock order buy backs, credit returns, ordering systems - routine, urgent, fast track);
- Technology: Niscom interfaced with NAPS (ordering, national parts locator);
- Quality issues (correct delivery, JIT etc.);
- Inventory control (manual nils per location etc.);

Session 1: To assist trainees understand the implications of meeting *customer requirements* for *genuine parts*, it was necessary to build up a diagrammatic representation of the language concepts. Figure 10 illustrates the relationships underpinning the idea of *chain of customer* and degree of urgency (***routine order**, **urgent order*** and *fast track* which includes *vehicle off **road***).

FIG 10 CHAIN OF CUSTOMERS


NPDC
Distribute parts through dealership networks
Dealerships
(departments)
Service
New Cars
Used Cars
Insurance
P & A Division
(customers)
(internal/external)
External Customer
Trade
eg. panel beater, car mechanic
Retail (Off the Street Customer)
Internal Customer
Car Service Department
Air Conditioned & Accessories
Warranty
Final Customer
Other Car Owners
Customer Demand
Trade Places Order
P&A Places Order with NPDC
NPDC Despatches Order
P & A Despatches Order to Trade
Repaired Car
A. ELLER

The extract on the following page is taken from the Activity Sheets designed for the dealership visit. It is a synthesis of the contributions of each trainee and involved considerable discussion, negotiation, conferencing and editing by the group. This ensured that the trainees developed a framework of ideas and the language skills necessary to plan, organise and take responsibility for the visit.

Group Activity — ***Questions for Dealership Visit (Compiled by Trainees)***

Customer Service - Nissan Dealership

- How may customers does the department have and what is the breakdown? (ie. % trade, internal, "off-the-street" customers) - Call this the "customer profile".
- When and why does the department use Nissan's "Customer Support" and "Dealer Development" sections?
- How would you rate NPDC quality of service concerning:
  - picking
  - on time delivery
  - condition of parts on arrival
- Are you happy with the service you are getting from NPDC?

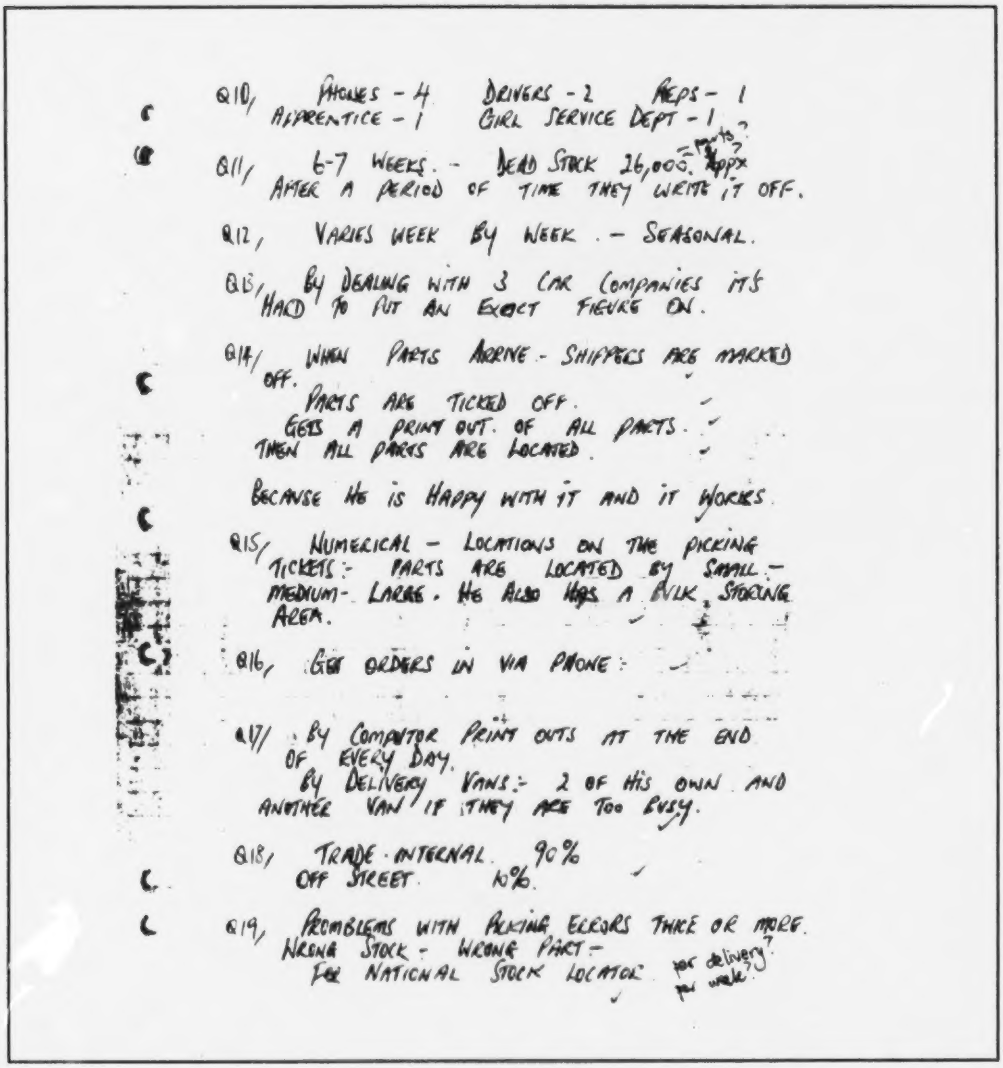
Dealership/Consumers

- What direct contact with the customers does the department have?
- Is the response time adequate for P&A requirements (to satisfy the customer)?
- What is the frequency and cause of customer complaints? How do you respond to these?
- Are customers happy with the "New Nissan" approach and what it offers?
- How do you deliver to your customers?

Ordering Parts

- How does the customer profile affect which parts are ordered?
  - which parts are ordered
  - how many parts?
  - % of "routine" and "urgent" orders
  - % of slow moving and fast moving parts
- How do you place your orders?
- How do you know which part numbers to order?
- Who receives the orders at Nissan? (via Niscom or Nidex)

Session 2 During the dealership visit, trainees interviewed the P&A Manager, showing careful judgement in asking questions depending on the information already covered and the available time. Prior to the visit they negotiated how they would record the information. The following text text is taken from one trainee's notes.



Q10/ PHONES - 4 DRIVERS - 2 REPS - 1
APPRENTICE - 1 GIRL SERVICE DEPT - 1 ?

Q11/ 6-7 WEEKS. - DEAD STOCK 26,000. parts? Appx
AFTER A PERIOD OF TIME THEY WRITE IT OFF.

Q12/ VARIES WEEK BY WEEK. - SEASONAL.

Q13/ BY DEALING WITH 3 CAR COMPANIES IT'S HARD TO PUT AN EXACT FIGURE ON.

Q14/ WHEN PARTS ARRIVE - SHIPPERS ARE MARKED OFF. ✓
PARTS ARE TICKED OFF. ✓
GETS A PRINT OUT. OF ALL PARTS. ✓
THEN ALL PARTS ARE LOCATED. ✓

BECAUSE HE IS HAPPY WITH IT AND IT WORKS. ✓

Q15/ NUMERICAL - LOCATIONS ON THE PICKING TICKETS:- PARTS ARE LOCATED BY SMALL - MEDIUM - LARGE. HE ALSO HAS A BULK STORING AREA. ✓

Q16/ GET ORDERS IN VIA PHONE: ✓

Q17/ BY COMPUTOR PRINT OUTS AT THE END OF EVERY DAY.
BY DELIVERY VANS:- 2 OF HIS OWN AND ANOTHER VAN IF THEY ARE TOO BUSY. ✓

Q18/ TRADE INTERNAL 90%
OFF STREET 10%. ✓

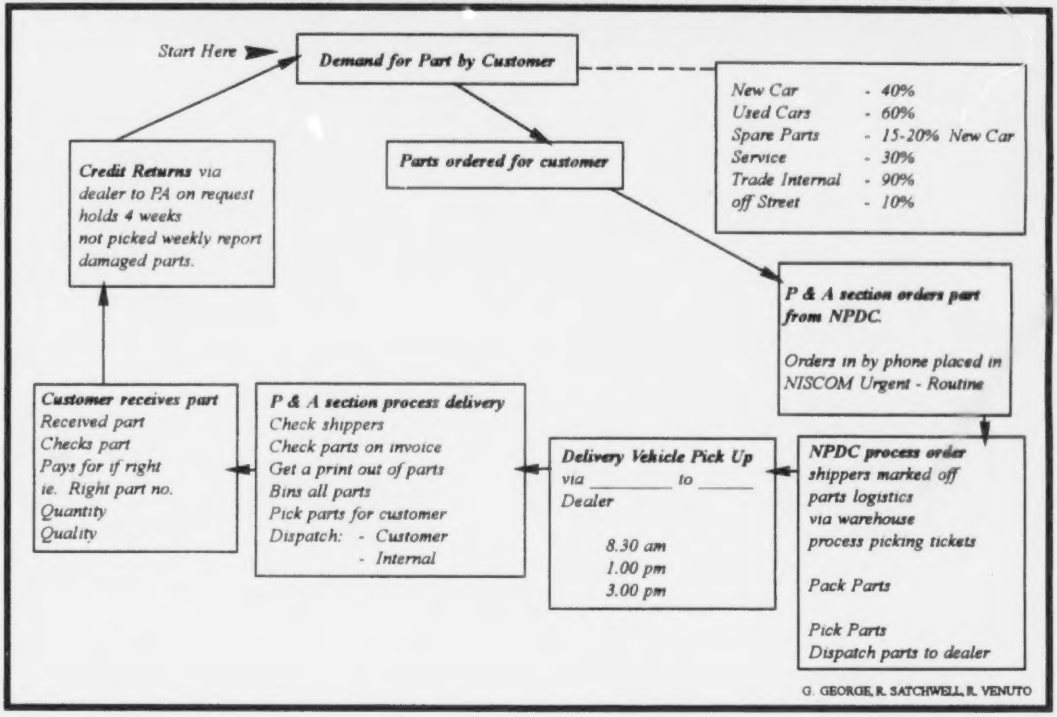
Q19/ PROMBLEMS WITH PICKING ERRORS THREE OR MORE.
WRONG STOCK - WRONG PART -
FOR NATIONAL STOCK LOCATOR ✓ per delivery?
per week?

Session 3 In the Review Session, the trainees worked in groups to reflect on the information obtained during the visit. In conjunction with their notes from the dealership visit, they used a draft Flow Chart compiled by the Project Officer to guide discussion.

Using a process of analysis, clarification, categorisation, abstraction and synthesis, each group worked on large pieces of butcher's paper to extend, shape and further develop the flow chart to reflect their perception of dealership parts movement.

Their charts were intended to illustrate their understanding of the principles of the parts and accessories storage and distribution system and also to include dealer (credit) returns which had not been included in the draft flow chart. The groups only had forty minutes to redesign their charts although they had done quite a deal of individual and informal reflection between the first and second sessions. For example of one chart, see Figure 11.

FIG 11 TRAINEES' ANALYSIS - DRAFT FLOW CHART OF DEALERSHIP P & A MOVEMENT


Start Here
Demand for Part by Customer
New Car - 40%
Used Cars - 60%
Spare Parts - 15-20% New Car
Service - 30%
Trade Internal - 90%
off Street - 10%
Parts ordered for customer
Credit Returns via dealer to PA on request holds 4 weeks not picked weekly report damaged parts.
P & A section orders part from NPDC.
Orders in by phone placed in NISCOM Urgent - Routine
NPDC process order shippers marked off parts logistics via warehouse process picking tickets
Pack Parts
Pick Parts
Dispatch parts to dealer
Delivery Vehicle Pick Up via ________ to ______ Dealer
8.30 am
1.00 pm
3.00 pm
P & A section process delivery
Check shippers
Check parts on invoice
Get a print out of parts
Bins all parts
Pick parts for customer
Dispatch: - Customer
- Internal
Customer receives part
Received part
Checks part
Pays for if right
ie. Right part no.
Quantity
Quality

G. GEORGE, R. SATCHWELL, R. VENUTO

Each group then gave an oral report to the larger group, indicating the rationale behind the organisation of their particular flow chart. The suggestions of all groups were eventually combined to contribute to a definitive flow chart.

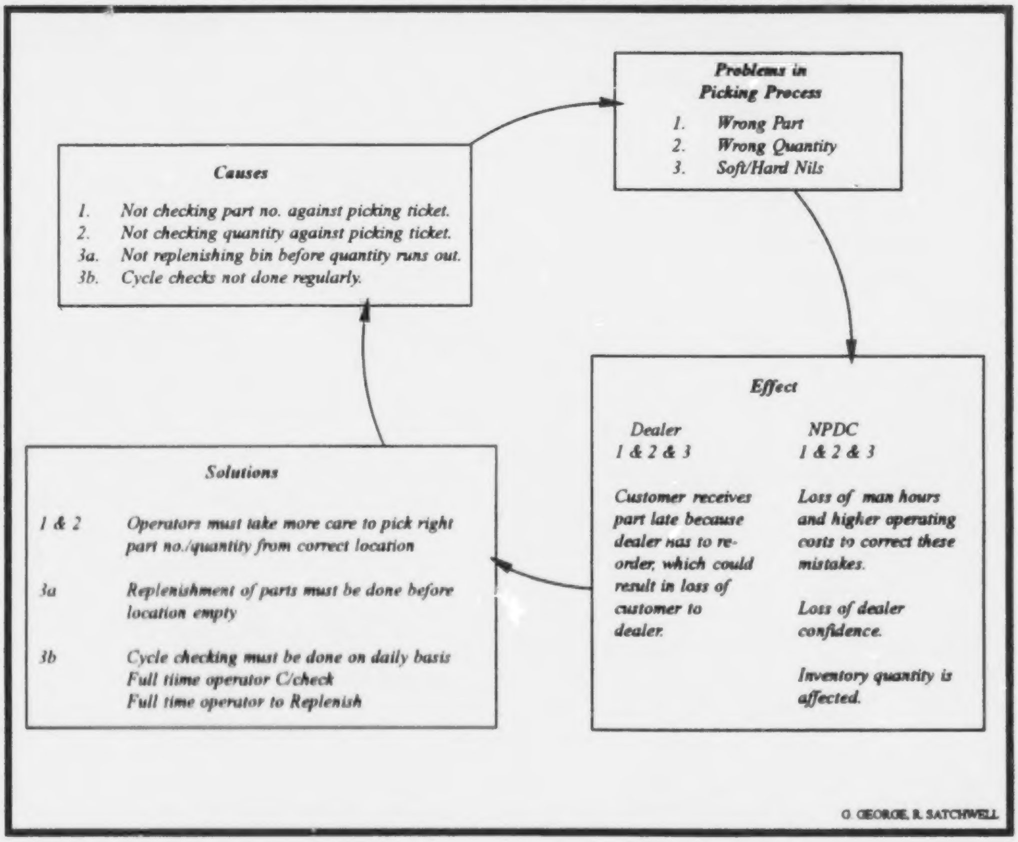
Session 4: The trainees were required to host the reciprocal visit of the dealership personnel, plan the itinerary and tour of the warehouse, negotiate roles and responsibilities, address issues of policy and protocol, discuss the kinds of things they would like to present and reflect on the things of particular interest likely to be raised. All aspects of the planning and preparation were discussed and confirmed with the Warehouse Manager.

BEST COPY AVAILABLE

Session 5: Trainees hosted the reciprocal visit of dealership personnel to the NPDC, undertaking various roles including welcoming visitors, guiding them through the warehouse and giving closing thanks. Every participant explained his/her job either to individuals or to small groups of visitors.

Session 6: This involved a review of the reciprocal visit. The trainees discussed the concerns of dealership personnel and other issues which emerged during both visits. They prioritised three main problems, then divided into smaller groups to analyse the problems in detail, identifying cause and effect relationships, systemic factors and possible solutions. Each presented an oral report of their analysis and recommendations to the whole group. Figure 12 illustrates the analysis done by one group.

FIG 12 TRAINEES' ANALYSIS - DEALERSHIP P & A DEPARTMENT PROBLEMS



Problems in Picking Process

1. *Wrong Part*
2. *Wrong Quantity*
3. *Soft/Hard Nils*

Causes

1. *Not checking part no. against picking ticket.*
2. *Not checking quantity against picking ticket.*

3a. *Not replenishing bin before quantity runs out.*
3b. *Cycle checks not done regularly.*

Effect

Dealer
1 & 2 & 3

Customer receives part late because dealer has to re-order, which could result in loss of customer to dealer.

NPDC
1 & 2 & 3

Loss of man hours and higher operating costs to correct these mistakes.

Loss of dealer confidence.

Inventory quantity is affected.

Solutions

1 & 2	*Operators must take more care to pick right part no./quantity from correct location*
3a	*Replenishment of parts must be done before location empty*
3b	*Cycle checking must be done on daily basis* *Full tiime operator C/check* *Full time operator to Replenish*

G. GEORGE, R. SATCHWELL

The activities described in the preceding pages illustrate the central role of collaboration in developing curriculum that is relevant to both the learning needs of employees and the ongoing needs of the workplace.

Cooperative Learning, Risk Taking and Language Development

Throughout the program extensive use was made of cooperative learning in small groups to provide a more secure environment for taking learning risks. Developing group cooperation and cohesion was based on a respect for the skills and experiences of others and was achieved gradually over time. In this context language was used specifically to assist and affirm the efforts of others, for example through:

- sharing and explaining terminology, the task/or purpose of activity;
- listening to, clarifying and refining ideas;
- giving positive feedback;
- showing tolerance and empathy;
- being appropriately assertive.

Cooperative learning was critical to helping people of varying abilities share and draw upon each other's strengths to achieve things which they might otherwise find too risky or difficult. Over time less confident trainees were encouraged to take tentative steps to move beyond familiar territory, to embrace challenges and to develop a confident awareness of themselves as literate and strategic learners.

Learning Through Dialogue

The use of dialogue to talk through ideas and to clarify meaning was an integral component of the program. For example, when the trainees hosted the reciprocal visit for dealership personnel, each operator participated confidently explaining the procedures involved in his/her particular job. The visit had provided an opportunity for operators to have face to face contact with their customer and to address some of their concerns, illustrated by one dealer's query. He had read on his *Niscom* computer screen that the material ordered was *in progress*, and had assumed that the order would therefore be available for dispatch. However, the operators explained that within the warehouse context, *in progress* meant that material had been through the *Receiving* section but may be held up in *Inspection*, or awaiting further processing.

Improved understanding between the two parties facilitated better communication and consequently, better working relationships. The reciprocal visit also enhanced the trainees' confidence to speak in a different situation and to a different audience.

During these sessions particular concepts were continually reinforced and linked to others. The following examples illustrate recurrent themes and the reinforcement of language concepts:

* The concept *customer requirements* includes the idea of fulfilling orders on time as defined by type of order - *routine* (weekly) *urgent* (daily) or *fast track* (within hours). This concept was first introduced in the early stages of the program. Because it is a fundamental concept, it emerged again and again, for example, in *chain of customers* (Dealership Network) and *Picking Processes*.

- The idea of urgency in *customer requirements* appeared in a later unit of the program, this time in relation to OH&S. A risk assessment for manual handling conducted by one group of trainees identified a potential hazard in *urgent orders dispatch.* The shelving for the *sorts slots* was too high at the top level. This problem also affected efficient dispatch of items to the dealership *ie. right pick delivered on time.*

Discussion and explanations of new concepts or terminology was combined with highlighting key words and examples on the white board. As trainees discussed a topic, their insights were added to the developing overview on the white board. This often shaped a proposed learning experience. As trainees asked critical questions, such as, *"Do you want us to write down what is there now or what we think should be there?"* a particular task would be extended to incorporate both perspectives. This occurred with the task of on-site OH&S data collection, resulting in a more comprehensive use of analytical and reflective skills.

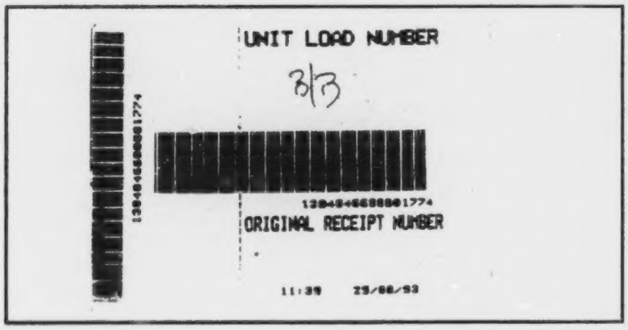
Gradually, trainees participated more confidently in dialogue, particularly in the smaller groups where the use of "lingua franca" was integral to draw on their own experience.

Oral reports using white board or butcher's paper summaries followed small group activities. Some trainees had rarely been required to speak in public, however over time they became more accustomed to oral presentation - acquiring the mannerisms, body language, skills and stance of more accomplished speakers. Practice in presentation was modelled by the project officer and led to more confident use of language. Parallel to this development was a corresponding improvement in understanding the needs of the audience, be it re-arranging furniture, using white board pointer or encouraging the audience to ask questions.

Reading Workplace Texts

Workplace texts have been used extensively in the program to encourage the trainees to analyse text, layout, language and meaning, in relation to audience and document use. In some instances the text needed to be decoded, as illustrated in the following examples. In other cases the trainees were required to deconstruct the text, modify it, then reconstruct it (comprehension and editing skills).

Example 1
Decoding to understand the language of numerical text of the technology based (NAPS) (Ticketing System)

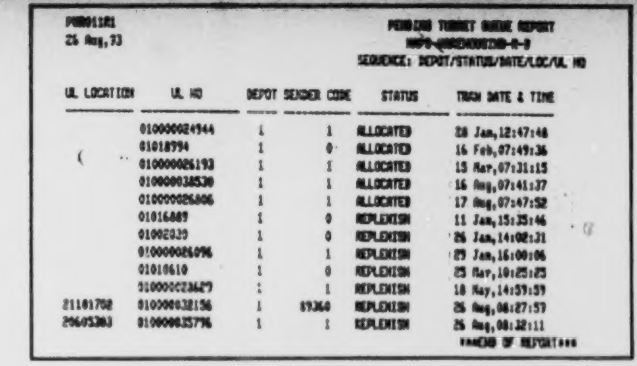


UNIT LOAD NUMBER

3/3

ORIGINAL RECEIPT NUMBER

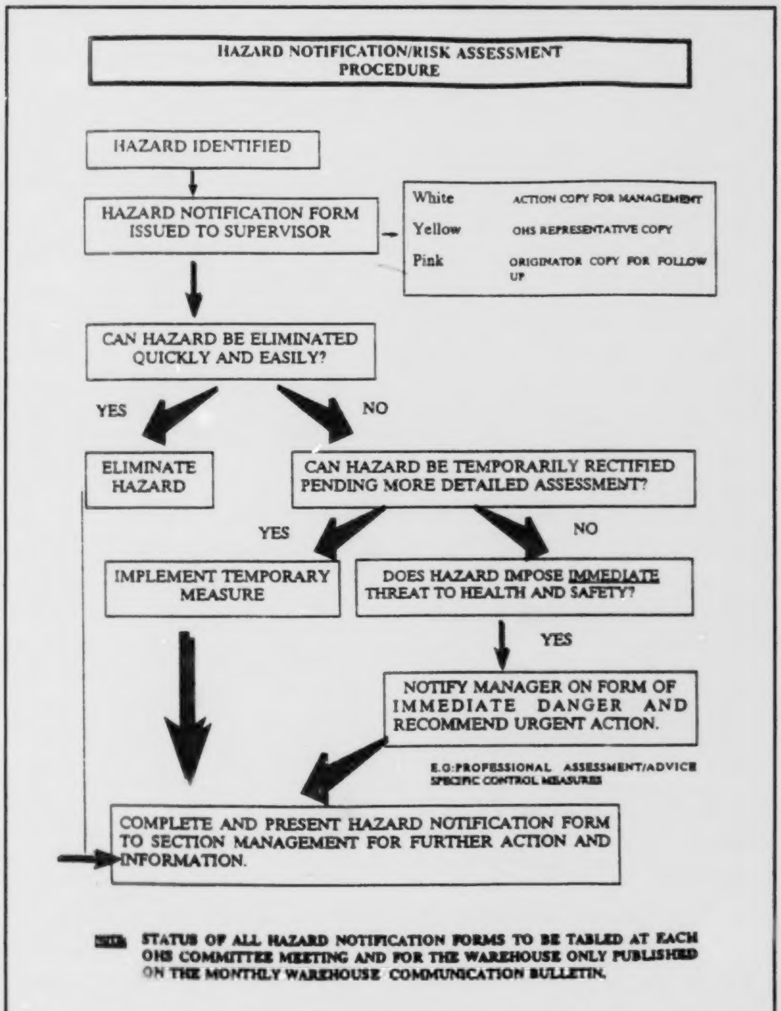
Example 2
Decoding to interpret
the Turret Queue Report
on the NAPs screen
in the Receiving Area



```
PUR011R1                                         PENDING TURRET QUEUE REPORT
25 Aug,93                                             [illegible]
                                          SEQUENCE: DEPOT/STATUS/DATE/LOC/UL NO

UL LOCATION    UL NO        DEPOT SEEKER CODE    STATUS       TRAN DATE & TIME
-----------  ------------   ----- -----------  ----------    ----------------
             010000024944     1          1     ALLOCATED     28 Jan,12:47:48
             01018994         1          0     ALLOCATED     16 Feb,07:49:36
             010000026193     1          1     ALLOCATED     15 Mar,07:31:15
             010000038530     1          1     ALLOCATED     16 Aug,07:41:37
             010000026806     1          1     ALLOCATED     17 Aug,07:47:52
             01016889         1          0     REPLENISH     11 Jan,15:35:46
             01002029         1          0     REPLENISH     26 Jan,14:02:31
             010000026096     1          1     REPLENISH     29 Jan,16:00:06
             01010610         1          0     REPLENISH     25 Mar,10:25:25
             010000023627     1          1     REPLENISH     18 May,14:59:59
21101702     010000032156     1      69364     REPLENISH     25 Aug,08:27:57
20605303     010000035796     1          1     REPLENISH     25 Aug,08:32:11
                                                             ****END OF REPORT****
```

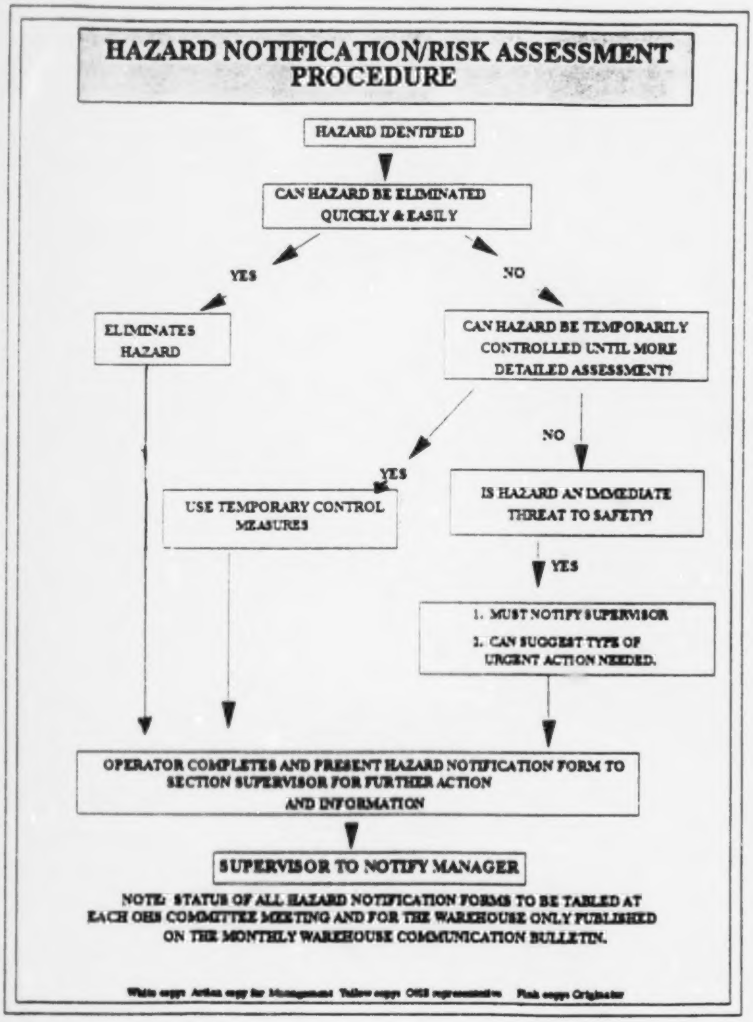
An ideal, yet unexpected, opportunity to ensure that a VIC learning experience could impact on work place practice arose during the program. The Human Resources Department of NPDC was reviewing the OH&S Workplace Procedures and Practices and invited trainees to review and trial a newly drafted *Hazard Notification/Risk Assessment Procedure* and *Hazard Notification Form*. The on-site risk assessment task and the analysis of these forms became part of the VIC Manual Handling topic.


HAZARD NOTIFICATION/RISK ASSESSMENT PROCEDURE
HAZARD IDENTIFIED
HAZARD NOTIFICATION FORM ISSUED TO SUPERVISOR
White ACTION COPY FOR MANAGEMENT
Yellow OHS REPRESENTATIVE COPY
Pink ORIGINATOR COPY FOR FOLLOW UP
CAN HAZARD BE ELIMINATED QUICKLY AND EASILY?
YES
NO
ELIMINATE HAZARD
CAN HAZARD BE TEMPORARILY RECTIFIED PENDING MORE DETAILED ASSESSMENT?
YES
NO
IMPLEMENT TEMPORARY MEASURE
DOES HAZARD IMPOSE IMMEDIATE THREAT TO HEALTH AND SAFETY?
YES
NOTIFY MANAGER ON FORM OF IMMEDIATE DANGER AND RECOMMEND URGENT ACTION.
E.G: PROFESSIONAL ASSESSMENT/ADVICE SPECIFIC CONTROL MEASURES
COMPLETE AND PRESENT HAZARD NOTIFICATION FORM TO SECTION MANAGEMENT FOR FURTHER ACTION AND INFORMATION.
NOTE STATUS OF ALL HAZARD NOTIFICATION FORMS TO BE TABLED AT EACH OHS COMMITTEE MEETING AND FOR THE WAREHOUSE ONLY PUBLISHED ON THE MONTHLY WAREHOUSE COMMUNICATION BULLETIN.

©Nissan (Draft: *Hazard Notification/Risk Assessment Procedure*)

The trainees queried why completing the Hazard Notification Form in triplicate was listed second in the process, arguing that dealing with a hazard has urgency over completing paper work.

They also queried the term *Section Manager* because within the warehouse that term could be applied to the leading hand, supervisor, coordinator, or manager. They made suggestions including a simplified layout, the inclusion of a third party in the risk assessment process, and simplifying the text. These proposed amendments were discussed with the Human Resources Department for consideration by the Warehouse OH&S Committee. A revised draft is presented below.

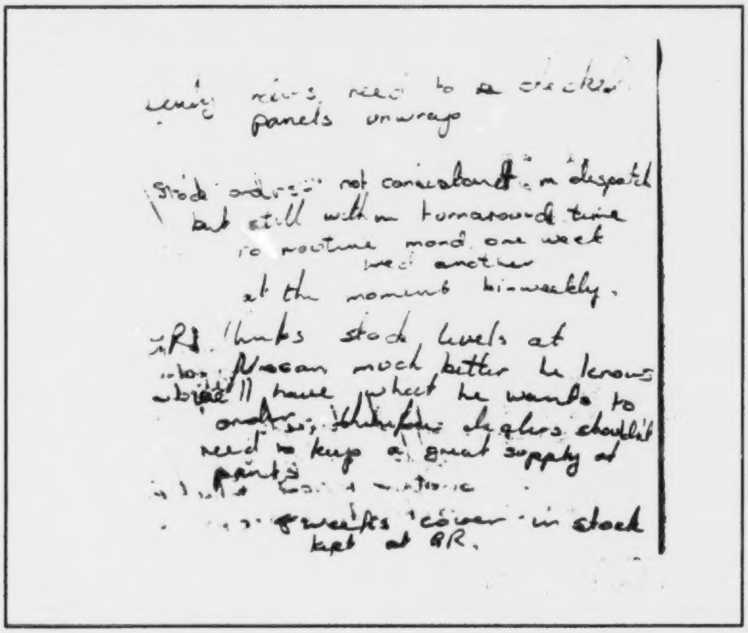

HAZARD NOTIFICATION/RISK ASSESSMENT PROCEDURE
HAZARD IDENTIFIED
CAN HAZARD BE ELIMINATED QUICKLY & EASILY
YES
NO
ELIMINATES HAZARD
CAN HAZARD BE TEMPORARILY CONTROLLED UNTIL MORE DETAILED ASSESSMENT?
NO
YES
USE TEMPORARY CONTROL MEASURES
IS HAZARD AN IMMEDIATE THREAT TO SAFETY?
YES
1. MUST NOTIFY SUPERVISOR
2. CAN SUGGEST TYPE OF URGENT ACTION NEEDED.
OPERATOR COMPLETES AND PRESENT HAZARD NOTIFICATION FORM TO SECTION SUPERVISOR FOR FURTHER ACTION AND INFORMATION
SUPERVISOR TO NOTIFY MANAGER
NOTE: STATUS OF ALL HAZARD NOTIFICATION FORMS TO BE TABLED AT EACH OHS COMMITTEE MEETING AND FOR THE WAREHOUSE ONLY PUBLISHED ON THE MONTHLY WAREHOUSE COMMUNICATION BULLETIN.
White copy: Action copy for Management Yellow copy: OHS representative Pink copy: Originator

• Nissan re-drafted form incorporating trainee suggestions

Writing and Editing

All trainees were encouraged to focus on meaning first and the conventions of writing (spelling/punctuation/grammar) later. Although not obliged to do repeat drafts of written work, trainees were encouraged to take rough notes which could be extended and refined later.

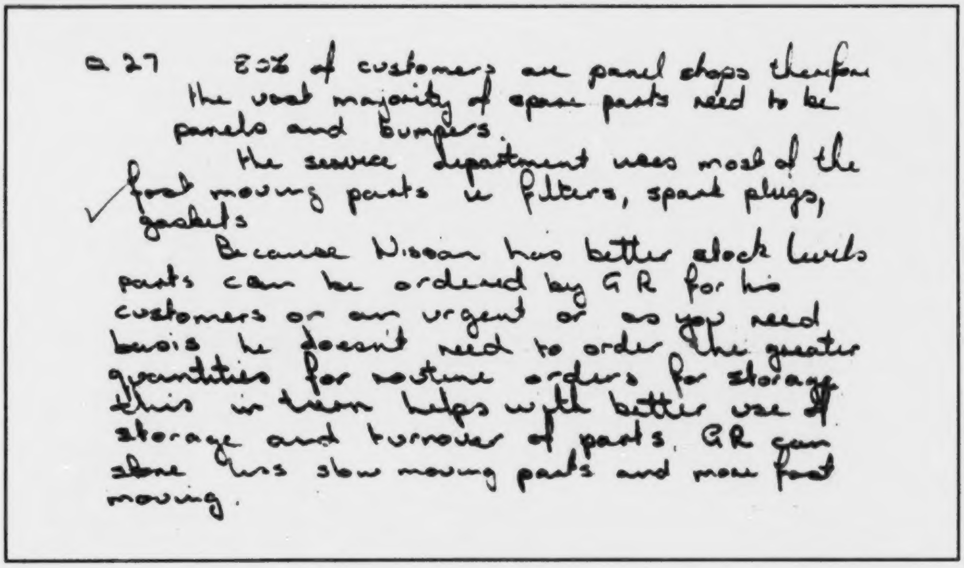
The following extracts by Christina Miller show two stages of writing and editing in preparation for constructing a flowchart.



[illegible] [illegible] need to be checked
panels unwrap

Stock orders not consistent in dispatch
but still within turnaround time
no routine mond one week
wed another
at the moment bi-weekly.

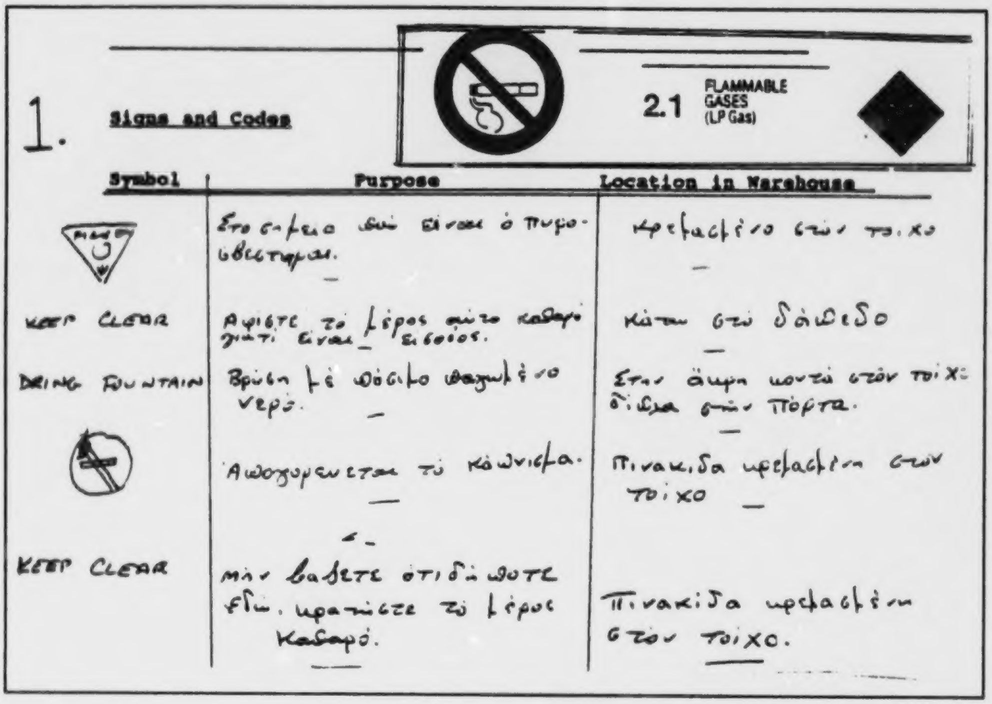
GR thinks stock levels at
[illegible] Nissan much better he knows
[illegible] he'll have what he wants to
order, so therefore dealers shouldn't
need to keep a great supply of
parts
[illegible]
[illegible] weeks 'cover' in stock
kept at GR.



a 27 80% of customers are panel shops therefore
the vast majority of spare parts need to be
panels and bumpers.
The service department uses most of the
✓ fast moving parts ie filters, spark plugs,
gaskets
Because Nissan has better stock levels
parts can be ordered by GR for his
customers on an urgent or as you need
basis he doesn't need to order the greater
quantities for routine orders for storage.
This in turn helps with better use of
storage and turnover of parts. GR can
store less slow moving parts and more fast
moving.

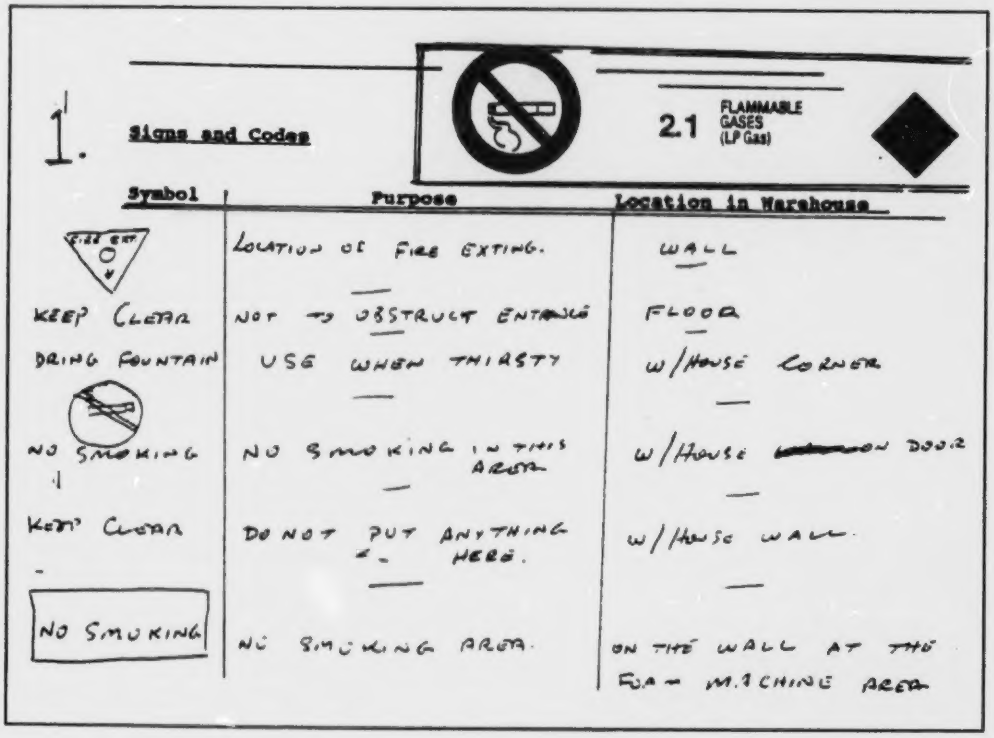
BEST COPY AVAILABLE

For some trainees it was helpful to complete the rough notes in their first language in order to concentrate on the meaning, then translate to English later.


2.1 FLAMMABLE GASES (LP Gas)

1. **Signs and Codes**

Symbol	Purpose	Location in Warehouse
FIRE EXT.	Στο σημείο αυτό είναι ο πυροσβεστήρας.	κρεμασμένο στον τοίχο
KEEP CLEAR	Αφήστε το μέρος αυτό καθαρό γιατί είναι είσοδος.	Κάτω στο δάπεδο
DRING FOUNTAIN	Βρύση με πόσιμο παγωμένο νερό.	Στην άκρη κοντά στον τοίχο δίπλα στην πόρτα.
	Απαγορεύεται το κάπνισμα.	Πινακίδα κρεμασμένη στον τοίχο
KEEP CLEAR	Μην βάλετε οτιδήποτε εδώ. Κρατήστε το μέρος καθαρό.	Πινακίδα κρεμασμένη στον τοίχο.

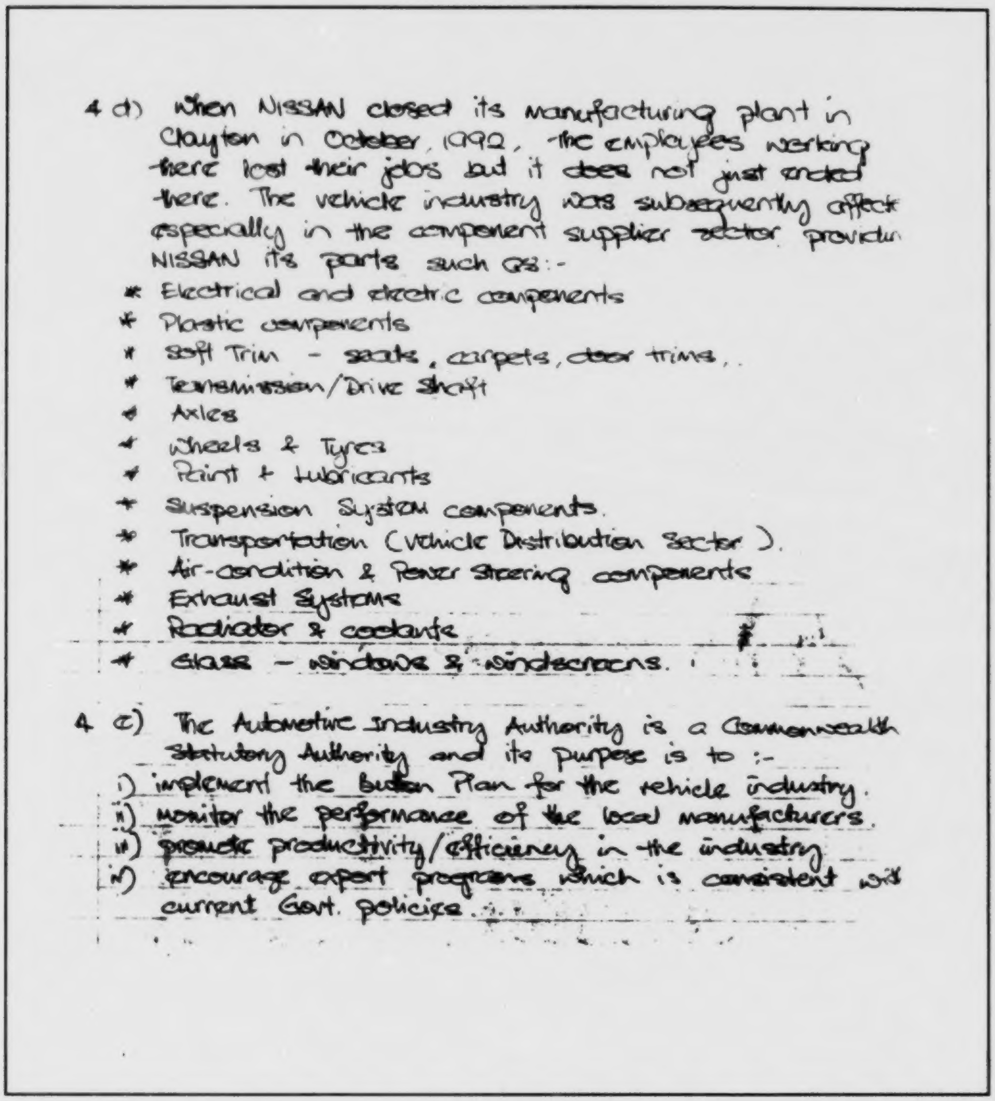

2.1 FLAMMABLE GASES (LP Gas)

1. **Signs and Codes**

Symbol	Purpose	Location in Warehouse
FIRE EXT.	LOCATION OF FIRE EXTING.	WALL
KEEP CLEAR	NOT TO OBSTRUCT ENTRANCE	FLOOR
DRING FOUNTAIN	USE WHEN THIRSTY	W/HOUSE CORNER
NO SMOKING	NO SMOKING IN THIS AREA	W/HOUSE ~~[illegible]~~ ON DOOR
KEEP CLEAR	DO NOT PUT ANYTHING HERE.	W/HOUSE WALL
NO SMOKING	NO SMOKING AREA.	ON THE WALL AT THE FOAM MACHINE AREA

BEST COPY AVAILABLE

The following excerpt from Raymond Ooi illustrates how trainees made new constructions, drawing on existing knowledge and incorporating new ideas. This well crafted piece of writing draws on knowledge of the industry and Nissan in particular.



4 d) When NISSAN closed its manufacturing plant in Clayton in October, 1992, the employees working there lost their jobs but it does not just ended there. The vehicle industry was subsequently affect especially in the component supplier sector providin NISSAN its parts such as:-

* Electrical and electric components
* Plastic components
* Soft Trim - seats, carpets, door trims,.
* Transmission/Drive Shaft
* Axles
* Wheels & Tyres
* Paint + lubricants
* Suspension System components.
* Transportation (Vehicle Distribution Sector).
* Air-condition & Power Steering components
* Exhaust Systems
* Radiator & coolants
* Glass - windows & windscreens.

4 e) The Automotive Industry Authority is a Commonwealth Statutory Authority and its purpose is to :-
i) implement the Button Plan for the vehicle industry.
ii) monitor the performance of the local manufacturers.
iii) promote productivity/efficiency in the industry
iv) encourage export programs which is consistent with current Govt. policies.

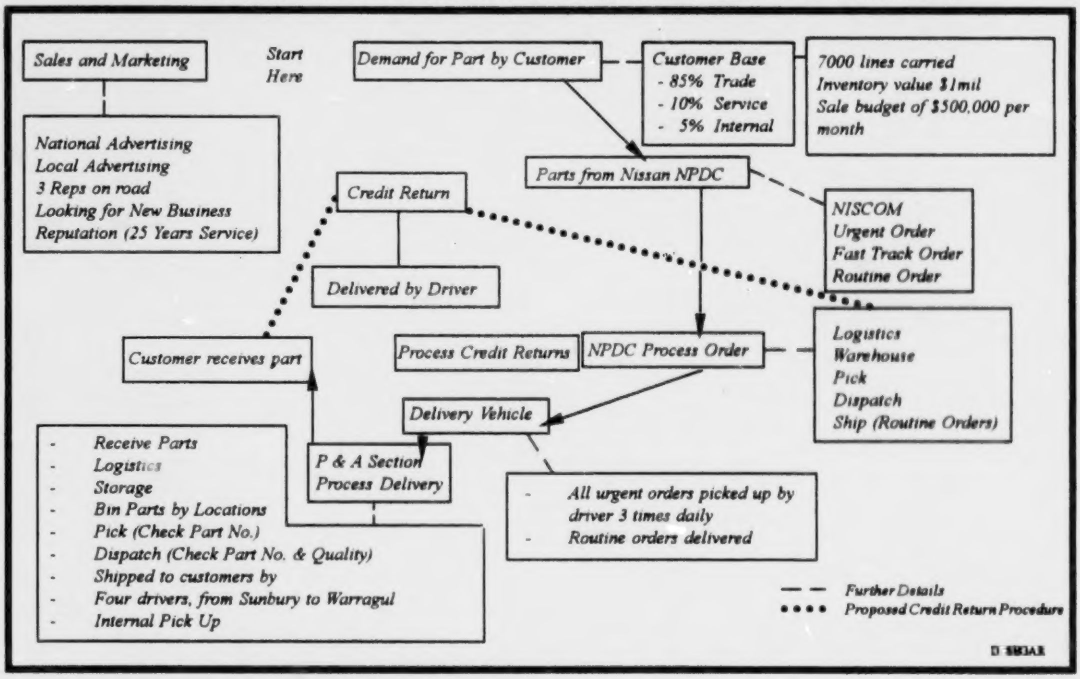
Writing tasks were always preceded by discussion and clarification of the purpose of writing and the ultimate audience. This oral "rehearsal" for writing included:

- brainstorming ideas;
- relating concepts to practical examples in the workplace;
- clarifying meaning;
- categorising and classifying groups of ideas;
- revisiting concepts connected with previous experiences;
- drawing on input from guest speakers.

BEST COPY AVAILABLE

These discussions were mapped on the white board to illustrate links, add new categories and show cause and effect relationships. Sometimes key points were then reconstructed on butchers' paper by individual groups. An example by David Segar is shown in Figure 13.

FIG 13 TRAINEES' ANALYSIS - DRAFT FLOW CHART OF DEALERSHIP P & A MOVEMENT


Sales and Marketing
Start Here
Demand for Part by Customer
Customer Base
- 85% Trade
- 10% Service
- 5% Internal
7000 lines carried
Inventory value $1mil
Sale budget of $500,000 per month
National Advertising
Local Advertising
3 Reps on road
Looking for New Business
Reputation (25 Years Service)
Parts from Nissan NPDC
Credit Return
NISCOM
Urgent Order
Fast Track Order
Routine Order
Delivered by Driver
Logistics
Warehouse
Pick
Dispatch
Ship (Routine Orders)
Customer receives part
Process Credit Returns
NPDC Process Order
Delivery Vehicle
- Receive Parts
- Logistics
- Storage
- Bin Parts by Locations
- Pick (Check Part No.)
- Dispatch (Check Part No. & Quality)
- Shipped to customers by
- Four drivers, from Sunbury to Warragul
- Internal Pick Up
P & A Section
Process Delivery
- All urgent orders picked up by driver 3 times daily
- Routine orders delivered
Further Details
Proposed Credit Return Procedure
D SEGAR

Analytical Thinking and Problem Solving

Developing analytical thinking skills was central to learning experiences in this program.

Stages of the group problem-solving procedure were modelled by the project officer and outlined on the white board, taking trainees step by step through the actual example. Then trainees organised themselves into groups to analyse a particular problem:

1. Small groups to:
    - Identify the problems
    - Brainstorm the likely causes
    - Summarise points
2. Larger groups to:
    - Categorise causes using the Ishikawa method on the white board
    - Identify impact of causes
3. Then back into smaller groups to:
    - Brain storm solutions
    - Consider the impact of solutions

BEST COPY AVAILABLE

The groups were encouraged to question vigorously within a structured framework of inquiry, for example,

"What are we doing this for?"
"How should we go about the task?"
"What issues are involved?"
"How can we categorise the issues?"
"What elements connect or are related to other elements?"
"Are there any common themes or ideas?"
"Are there any patterns?"

Having worked through the strategy once with one real problem and developed some ideas of the kind of questions they needed to ask themselves, each group set about analysing another problem which they had identified in the workplace during the activity on Risk Assessment.

The following examples show how one group tackled the task of analysis which introduced a more formal strategy for problem solving and required more precise use of language both to define and to explore the task. Some trainees need further practice at conceptualising ideas, to further develop their analytical and language skills.

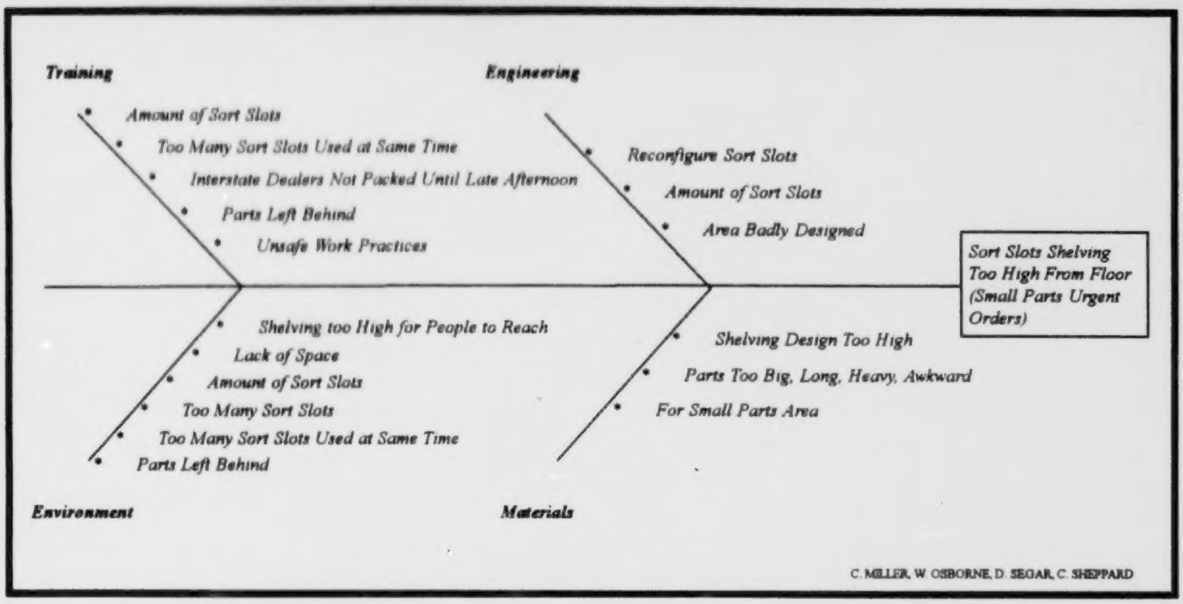
STAGE 1 BRAINSTORMING CAUSES OF PROBLEM

Problem: Sort Slots Too High From Floor
"Small Parts Packing"

- *Shelving Too high for People to Reach*
- *Lack of Space*
- *Re Configuring Sort Slots*
- *Amount of Sort Slots*
- *Not Enough Thought and Planning Within the Area*
- *Too many Sort Slots Being Used at the One Time*
- *Interstate Dealers. Not Packed Till Late Afternoon*
- *Parts Being Left in Top Shelf Sort Slots*
- *Unsafe Work Practices When Retrieving Parts*
- *Parts are Too Big, Long, Heavy, Awkward Shape To Be Entering Small Parts Sort Slot.*

C. MILLER, W. OSBORNE, D. SEGAR, C. SHEPPARD

STAGE 2 CATEGORISING PROBLEMS USING ISHIKAWA DIAGRAM


Training
Amount of Sort Slots
Too Many Sort Slots Used at Same Time
Interstate Dealers Not Packed Until Late Afternoon
Parts Left Behind
Unsafe Work Practices
Engineering
Reconfigure Sort Slots
Amount of Sort Slots
Area Badly Designed
Sort Slots Shelving Too High From Floor (Small Parts Urgent Orders)
Shelving too High for People to Reach
Lack of Space
Amount of Sort Slots
Too Many Sort Slots
Too Many Sort Slots Used at Same Time
Parts Left Behind
Environment
Shelving Design Too High
Parts Too Big, Long, Heavy, Awkward
For Small Parts Area
Materials

C. MILLER, W. OSBORNE, D. SEGAR, C. SHEPPARD

STAGE 3 BRAINSTORMING SOLUTIONS

Possible Solutions

- *Employ Taller People*
  (Anthropometry in relation to Ergonomics)
- *Re Design Shelving and Small Parts Area*
- *Continuous Packing of Sort Slots*
- *Platform to Reach Rop Shelf of Sort Slots*
- *Use of Trolley for Top Shelf*
- *Small Parts Only for Small Parts Sort Slots*

C. MILLER, W. OSBORNE, D. SEGAR, C. SHEPPARD

STAGE 4 CONSIDERING IMPLICATIONS

Possible Effects of Solutions

- *Effect of Employing Tall People (EEO on Discrimination)*
- *Re Design Shelving in Small Parts Area*
  (Time Consuming, Cost, Solving Handling Problems, Create A Better Working Environment, Eliminate the Risk of Personal Injuries)
- *Continuous Packing of Sort Slots*
  (Cost of Additional Packaging, Inefficient, Time Consuming, Bad Work Practice)
- *Platform to Reach Top Shelves*
  (Eliminate Bottom Shelf, In The Way, Dangerous If You Slip Off, Not Enough Room To Be Effective)
- *Use of Trolley for Top Shelf*
  (Lack of Space, Not Enough Trolleys, Cost)
- *Small Parts Only For Small Sort Slots*
  (Redesign Picking Area, Cost, Effectiveness)

C. MILLER, W. OSBORNE, D. SEGAR, C. SHEPPARD

BEST COPY AVAILABLE

Making Contributions, Connections and Extensions

From the outset it was agreed by the trainees, the project officer and management that a process of continuous improvement would apply to the program. Consequently, the curriculum design was responsive to suggestions about how material could be enriched and learning experiences which could be devised.

Participants responded by bringing in samples of workplace documentation (labels, and invoices), newspaper articles (relating to a recent court decision on an EEO) and examples of problems, workplace practices and great ideas, all of which became part of the resources for the whole group.

As the course progressed, the participants began to look ahead to the next time the program is presented. They began to see the curriculum as evolutionary and genuinely subject to the pursuit of continuous improvement, as evidenced by the comments of one participant *"I've been thinking about that idea of going to the casting plant. Maybe when the course runs next time the trainees could go there instead of ...."* .

Increasing the Complexity of the Learning Task

Throughout the program, the complexity of learning experiences was increased gradually. This was reflected in the nature of each task and the language skills required (analysis, synthesis, problem solving) and the level of abstraction especially in terminology.

Initial tasks required recognition of:

- simple cause and effect relationships extended overtime, followed by
- multiple causes and effects and eventually systemic relationships, as well as
- the formulation of multiple levels and categories of solutions and
- an appreciation of the implications in the workplace of particular solutions and recommendations.

Assessment of Trainees

Assessment of the trainees was based on their performance in a range of class activities and assessment tasks. Written tasks included summarising their observations and analysis of their work environment, preparing flow charts and graphs, and writing brief reports. Performance of trainees acting as guides for visiting dealership personnel, giving class presentations, reporting back to the group and participating in group activities were also included in assessment of learning outcomes. Where required, trainees were able to supplement written work with verbal explanation in order to demonstrate competent performance.

Assessment was continuous, giving trainees more than one opportunity to develop competence. Different topics were also re-visited on more than one occasion to give individuals opportunities to reinforce concepts and skills and demonstrate application in a range of tasks.

Some learning outcomes will require further work in subsequent units before they can be credited. It is anticipated that a variety of assessment strategies will be trialed during the course of the full program.

Trainees' Evaluation of the Course

At the completion of each unit trainees were asked to evaluate the unit. The suggestions arising from this feedback were incorporated into subsequent curriculum material and learning activities. This was particularly true of the comments regarding the amount of out-of-class work, and the difficulties associated with completing group projects out of class time.

Comments from the trainees were positive. Attendance by the trainees during the pilot program was excellent, with few absences, suggesting satisfaction with the program.

11.6 Observations & Reflections by Peter Waterhouse

The following themes emerged from the interviews that were conducted as part of the evaluation of the project.

Consultative Curriculum Development

One of the key features of the approach adopted at Nissan, as with each of the pilot programs, was the emphasis placed upon collaborative curriculum development processes. Involving the warehouse operators in the research and curriculum design, and incorporating their input into the course, was an innovation. Collaborating with a range of personnel across all of the NPDC departments was also something which had not been done previously. The increase in the initial numbers of employees who registered interest in doing the course from seven, to the final list of 42 applicants, indicates the success of using this approach.

Part of the challenge for the curriculum developers was to come up with a program which responded effectively to the diverse needs of the multiple stakeholders. When interviewed about the project Paul Willigenburg commented on how his understanding of this process changed. Whilst initially he thought the collaborative process would allow the curriculum to be developed according to management imperatives; he soon realised that the curriculum would need to meet multiple objectives if it was to be successful.

> *... when we started, initially I thought I could flood* [Ann] *with all the things I wanted, but very very quickly I found it wasn't so. I realised very very quickly that what you* [NALLCU] *really wanted to do was ... based on the framework of the VIC ... to develop what we* [as management] *wanted but also what the employees wanted. I was very happy about the way that was put together.*

Paul was impressed with the sensitive and detailed consultation processes which enabled Ann Eller to dovetail the individual employees' needs with the company's requirements. He reported feedback from one of the shop floor operators who was amazed at how the curriculum development process had facilitated such a thorough understanding of the warehouse operations.

... one of the employees said to me that they were amazed, this is after the first class, at how much knowledge Ann Eller had of what they did. Far in excess of what they knew. So she did her homework, believe me, she did her homework.

This sense of the curriculum being thoroughly grounded in the practices of the shop floor was reinforced in other interviews with the participants in the pilot program. Alan Barlow, a shop steward at the Nissan plant, commented on how the information was gathered for the curriculum:

She's got it from the people on the floor, from management, from quite a lot of people. ... You know she was just askin' them about different ways to do the job, the job they're doin' everyday like. I think it come over very well.

Clarke Sheppard, another participant in the program, was also very positive in responding to questions about the curriculum development process.

She come out and spoke to me about different things. She went around to everybody of course and spoke to different people. ... I reckon it's a good idea because this is where we work. So I suppose we should be learning all about our jobs and everything like that. I reckon it's better the way you've done it.

Clarke felt the training was better than other training he had experienced, better because it was more relevant, more interesting and more fun. He explained;

I quite enjoy going to it, you know, it's not a real study thing. You can have a bit of a laugh and I think that's important too. You can't be too serious about things, you know I think everybody appreciates that too.

The following two comments come from a management perspective. David Lloyd Manager of Personnel said that he had neither seen, nor heard of any problems with the curriculum development.

I think that's been very good. I think the way Ann has canvassed the warehouse staff, and from what I've seen she's made it very relevant to this particular warehouse, their terminology, their general speak; and that's reflected in the people responding. ... from my perspective there haven't been any problems.

Paul Willigenburg had an additional point to make about the curriculum development process. He stressed that he had wanted the process to be driven by the shop floor, rather than top down from management. He was impressed by the way the process brought the best out of people. The level and quality of shop floor contributions both pleased and surprised him; sometimes, he said, to the point of amazement.

... this whole thing just opened my eyes, that really people had been sitting there for ten years waiting

for this to happen. And it took, not just this process, but almost a bloody recession - or the change in the company - for us to finally wake up to the fact that we had all this. All this input sitting there dormant.

The curriculum development processes initiated by NALLCU were able to harness some of this potential input. However Ann Eller stressed that this would not have been possible without both the expertise which NALLCU provided, and the support from the company. This latter support also took the form of being flexible and prepared to bend when circumstances dictated. As Ann commented:

... the curriculum development's been really good. What I've really liked is that expertise has been there on hand [from NALLCU] *when I've needed it, because I have, because a lot of what I've been doing isn't written down anywhere ... but also ... the collaboration here at Nissan has been terrific. And having that extended timeline has enabled that to take place. I don't know what would have happened if we had tried to stick to the original timeline. Half of the course wouldn't be there - because there was an original concept for the course and that's been extended, because of input from people, including management level. That couldn't have happened if there hadn't been the time for that to grow, for it to develop... being here in an on-going way was really crucial to that development, really crucial.*

The theme of time is taken up further below. However it should be noted that the collaborative curriculum development processes were a significant factor in the level of ownership, interest and enthusiasm which was demonstrated for the curriculum. As is evident from the comments in the following section.

Given the extremely tight timelines constraining the curriculum development processes in this project it is noteworthy that the process was so smooth. This success might be attributed to two inter-related factors:

- the establishment of the Industrial Agreement prior to the commencement of the program;
- the high level of co-operation and goodwill demonstrated by Nissan personnel, from the shopfloor through to senior management.

Enthusiasm, Interest and Building Confidence

I was down in our Receiving Department the other day and there was one guy down there, in his lunch hour I might add, with his head in a book. "What are you doing?" "Oh, this is part of the course I'm involved in." he said ... He didn't know that I was involved in any way what-so-ever and he gave very favourable comment. ... I haven't heard any negatives ...

The comment above, from Tim Duncan, Materials Manager, is typical of comments on the program. There was a positive response to the curriculum and the delivery of the training from management, union representatives and shop floor personnel. The comment from Clarke Sheppard quoted earlier indicated that participants enjoyed the program but it was also evident that they found it challenging and informative. Alan Barlow commented:

Well I think she's put it over very good, because she's done 'er 'omework; an like flowcharts, 'alf of *us didn't know what flowcharts was. ... and through the classes we're learnin' one different aspect of the job to another ... Yes, how it all fits together.*

This notion of all the pieces fitting together is also taken up in more detail below. However it is important to note how participants felt the program responded to their learning needs. Participants noted the importance of teaching styles and activities which put them at ease and allowed them to develop their enthusiasm and confidence.

I think Ann has got us all at ease ... we're not scared of asking questions if we don't understand what she's talking about. There's a few of us there will say, "Ann could you explain that?" an ... I think she's got the confidence of the pupils.

From another participant:

... the classes are excellent mainly because of the easy going attitudes of the teachers and the way they impart information and the context in which they prepare it. I have also taken particular notice that there is no discrimination against people who ask questions constantly or if people have a hard time spelling or how to put things in correct perspective.

Robert Yates also felt that he managed to achieve this element of comfort or relaxation in his class. However he was quick to point out that this relaxed atmosphere was not for its own sake, but fundamental to effective participation and learning.

Once they relaxed, and I relaxed there was a regular good exchange. For me, once you've got people smiling and making comments, you've got them, things are on the way. And yeah, we're running about four standard jokes now ... The sort of scuttlebutt that is going on is I think much the same as that going on in the warehouse, in terms of the interchange between people. So I would think they are relaxed enough. In terms of the work they're doing, ... it's terrific. Once they stop and think about things they seem to be coming up with all sorts of things. The interplay between people, prompting and reminding them of all the little things that happen; the information that the entire class holds is being conveyed around the entire group.

Clarke Sheppard also noted the importance of the group interactions:

... it's more of a group thing, it's not an individual thing, I think. I enjoy it because it gives you a bit more confidence too, because you've got to get up and talk in front of everybody. You never had to do that before, it was just sitting there listening and you weren't really participating in anything...

The importance of developing confidence and a willingness to learn cannot be overemphasised. If workplace change is to become a reality on the shop floor, there is a need for shop floor employees (as well as management and every level in between) to be willing to change, to experiment, and to learn. Lack of confidence lies at the root of much resistance to change. Sue Pontin, another of the participants in the program, felt that the course helped develop confidence and self esteem.

The other thing I think, with any learning thing, you just get that little bit more confidence each time. Like a little bit more self esteem to be able to say what you think, about your job, or people. I don't know, it just makes you think differently. It probably would help me if I went to another place. I mean even outside, socially, with clubs or things.

When questioned further on this issue Sue was quite definite about attributing this increased sense of self esteem, this new found confidence, to participation in the course.

Oh yeah. [with emphasis] *Yeah, you look at the first day of the sessions when people were really nervous to speak out or say anything, even to ask a question. But now it's quite good, people speak freely without having to worry about if they've asked the wrong question or feel really silly.*

Speaking from a management perspective, Paul Willigenburg also noted the enthusiasm and the apparent changes in confidence:

... you just see the enthusiasm for it on the shop floor and the fact that people are prepared to come in here and ask me for time in their learning group; to walk in here and say. "look, in working time would you allow us to have a half an hour to have a pre-class meeting?" Now two years ago they wouldn't have even dared to set foot in the room, but now they are prepared to come and ask me could they do it. And I'm saying yes.

"There's A Lot More To It"

Increased confidence however is not the only outcome of the program. Reference was made earlier to the notion of putting the bits together. The program was designed to extend beyond the company's boundaries to the dealerships and a local parts manufacture supplier. It was hoped that this extension might create a precedent for future training. Inviting Nissan managers and other relevant guest speakers into the sessions was intended to give all concerned the opportunity to broaden their understanding of the company's operations, various work roles and responsibilities and to stimulate some new ideas on how training may be undertaken.

There is substantial evidence to suggest that this strategy was successful. A strong recurring theme in the interview transcripts is the sense of participants gaining a sense that "there's a lot more to it." As one participant noted in a written response to the program:

"I learnt that there is a lot more involved in the smooth operation of the warehouse than I previously thought."

Alan Barlow also commented on participants gaining a sense of the whole, how the entire warehouse operates:

I think the project is doing what it says. All about the knowledge units, and it's making people think more deeply about the job and have more understanding about the job and how one department goes into the next.

Typically participants felt that they had previously known their own bit of the system but not necessarily the whole thing. As Sue noted:

I mean because we're all from different areas in the warehouse we basically know how the warehouse is run, but not in detail, you know, like fully? Not fully. We don't have a chance to go down there and work for the day, it's just not like that. You're up here and you virtually just stay here and do your job ... and it's such a big place, and considering the other jobs that other people do. There's *a big variety here.*

Several participants expressed the view that they did not fully appreciate even their own role in the processes. As Clarke Sheppard explained:

> *... you don't realise what's involved with it. Like Ann explains it to you, what you all do. You know, the way she puts it, then you realise; "Oh gee, I do that and I do that." The way she puts it. I ring people up, and I speak to people, Communication and all that ... there's a lot more to it and I think everybody's in the same situation. They do realise there's a lot more to it.*

Christina, a leading hand in the Dispatch area, and another of the participants in the group, also commented on the importance of learning about other workers' tasks. She noted that not only had the program helped her to understand others' jobs, she appreciated that it had helped others to understand her role in the warehouse.

> *I find it very good, interesting. You look at other people's jobs a bit more objectively. You see what's involved. I know I've had comments from people about mine because I don't just stand there and pack. And once the day shift people go home we just don't stop at night.*

Paul Willigenburg also appreciated the way the training program was developing this higher level of awareness amongst the work force; an awareness not only of their own skills and contributions but also of their shop floor workmates. As he put it:

> *... when they started to analyse their jobs* [they found] *that one simple function might have nine or ten steps and involve four or five decisions, and yet they do it in two seconds, because they've got the experience to be able to carry out that function.*

Building Quality Networks

This notion of expanding consciousness was not limited to understanding operations on the warehouse floors. An important aspect of the program at Nissan was the deliberate strategy to move beyond the walls of the warehouses; out into the office and administration areas; out into the networks which supply the warehouses; and out to the dealerships which receive goods from the NPDC.

These initiatives were intended to create precedents in training which might be followed beyond the pilot program. Their development was carefully crafted with the involvement and support of key personnel who will be required to sustain these practices after the pilot program. They were intended to help trainees develop a broader picture of their role in the operations of the company. As Roger Beruldsen, Manager of Dealer Development, explained:

> *... well we get a lot of Dealer complaints that the warehouse people don't understand what happens when they get the part, and it also suggests the Dealership people don't understand the size of our operation here ... I think in the past we've been quite isolated, like working in a little box without really understanding all the implications.*

In order to improve the communication, build more effective networks and help participants gain a greater understanding of the implications, visits to the Dealerships were built in as an integral part of the program. Roger pointed out that these visits were not merely courtesy visits, but carefully structured parts of the training program.

> *It's not like we're just ringing them up the day before and saying "Oh, we're bringing a group down to have a walk around." We've indicated to them that there will be specific things that we will be doing, and things to ask at the Dealerships, and that the Dealerships will have to play a specific role. So it's not just a courtesy visit. There's precise things that we want to get out of it.*

The response to these visits has been very positive to date, with Roger reporting that several Dealerships have already indicated their willingness to participate in future programs. An extension to this developing relationship was the reciprocal visits in which people from the Dealerships visited the warehouse. Roger was confident that such initiatives will have a direct impact upon shop floor operations.

> *I'm sure it's going to build a stronger relationship where we've got that involvement. From the warehouse point of view, I think ... the people in the warehouse will understand there's another link beyond putting the parts on the truck, which is very important. It's saying that the level of service that we're offering is improving, and also for the warehouse personnel, it'll give them a greater feeling of what we're doing.*

Whilst Roger was using the course to enhance his networks with the Dealerships receiving parts from the NPDC, the same idea was being developed at the other end of the NPDC system, with the various Suppliers of parts to the warehouse. Tim Duncan, Manager of Materials Supply, reported that the first visit to a Supplier was very successful. As with the Dealership visit this was structured as part of the course and the trainees had particular tasks to complete or workplace practices to analyse during their visit. Tim's feedback from Suppliers was quite positive.

> *... I rang around a couple of Suppliers and I had no problem at all about getting a group in, they were only too pleased to show them. Most large Suppliers we deal with are only too pleased to show groups through.*

Tim felt that the course was helping the warehouse employees to develop a better understanding of NPDC operations, and in particular, the reasons behind many of the processes and procedures.

> *I think the concept of it is very good ... it broadens their outlook on what we at Nissan are all about. ... they get a better understanding of the ordering process, the Receiving, and the need to get it through our warehouse in a controlled fashion and out to where we all get paid from - the customers. I think this course goes a long way in picking up that approach and some of the background and the reasons why we do things the way we do.*

Tim also appreciated the opportunity to contribute directly to the course, by coming in and talking with the training groups. This was also a conscious part of the course design; an attempt to build relationships between shop floor personnel in the warehouse and administrative personnel "on the other side of the door". Whilst Tim felt it was important for the students to have the opportunity to "fire their questions at someone like myself", Clarke Sheppard felt it was interesting to learn about what happens on the other side of the door.

> *... it makes it a bit more interesting, like going to Bosch and everything like that, and having Tim Duncan visit the class. Even though you know the guy, you don't really. It's funny how you don't really know what the guy does, what he's involved with. It's interesting to find that out.*

In a related development after completion of the pilot program, Paul Willigenburg initiated a small scale job rotation scheme for warehouse employees. The program will enable interested employees to spend some time working in the Customer Support and Accounts departments. This initiative could be seen as an extension of the elective, further building the networks and consolidating the understandings which the warehouse people are developing through the course.

A Question of Time

Another recurring theme in the interview data is the question of time: time for the project and the curriculum to evolve; time to organise class visits and activities; time to complete homework; time to plan team teaching; time for effective consultation; time to complete the VIC; time for change to take effect. It seems everyone needs more time - there is never enough. Many might argue that this is a problem endemic in our society, it is certainly not unique to curriculum development, to training at Nissan, nor to the development of pilot programs. However it was mentioned in so many different contexts that it should be noted.

Mention has already been made of the importance of having development time for the project to evolve and the significance of adjusting the timeline to allow this to happen. Roger Beruldsen has also commented on the importance of putting time into setting up the Dealership visits. On this issue he noted:

> *... they* [the dealerships]*are fairly confident that it will work because they can see that there's a long development process going into it even before we get there.*

Ann Eller also stressed the importance of this issue. She pointed out that the activities based curriculum takes time; both in the development and in the delivery. It seems, however, that the investment of time is necessary in order to reap the dividend in outcomes which have genuine and sustainable effects upon the workplace.

> *... doing the team teaching stuff, ... doing things like the Supply and Dealership visits, that gobbles up huge chunks of time for making the contacts, for the letters, for the meetings; like there have been three meetings ... just to even get to the Dealer visits - and then the day, and then there will be follow up as well, ... that aspect of the work takes enormous chunks of curriculum writing time.*

In a context in which time for curriculum development is counted in hours rather than days or weeks, this is a salient point. However the issue of time needs to be considered in the context of outcomes, rather than merely inputs. It is not difficult to find examples of training packages swiftly and efficiently put together, such packages may appear attractive and inexpensive. However they are not necessarily cost effective. If they fail to produce the desired outcomes, if they generate no change where change was sought, then they have been expensive, no matter how cheap they appeared to be.

Whilst concerned about the amount of time required for curriculum development, Ann Eller was neither defensive nor apologetic about the time taken. She points out that effective collaboration, team teaching and learning all depend upon effective relationships.

You can't take short cuts in your relationships with people - and the other stuff doesn't flow unless you build your relationships with people. That's my feeling about it. ... if you want to work in with the people in the workplace, because you have to remember this [program]*is an infinitesimally small part of their lives, you have to build the relationships, and you can't take short cuts..*

The issues of time for homework and class activities, and reward for time in training are treated separately below.

Is it just Homework or Work at Home?

Whilst feedback from participants about the program was overwhelmingly positive; one issue was repeatedly referred to as a problem - homework!

I have a bit of trouble with the homework, only for the fact that I get home at nine o'clock. Not having much time in the morning, like I have things to do at home. When I get home then, at nine o'clock, it's quite a long day and ... I like to sit down and see how the family's been.

Another participant commented:

I think a lot of people, in general, [have had some problems with] *the homework as they call it. You know, ... like a lot of people have got families and things like that ... By the time you get home at night you can't be bothered with it.*

Speaking as shop stewards, Alan Barlow and Fred Gage highlighted the homework problem as a key issue affecting the future viability of the program. They noted that some topics and classes have required extra time which was not forthcoming in the classroom program. In the absence of this time employees may be required to spend even longer trying to cover the curriculum. They made the point that learners with literacy, mathematics or language problems may be particularly disadvantaged in such circumstances.

... say another hour would be ideal wouldn't it. ... [but] *instead of an hour we're gonna be spending two, three or even four hours on homework, and we're gonna be asking each other, is this alright? Is this what she wanted?*

Fred Gage in particular argued strongly that the existing time frame was insufficient to cover what was being expected. He felt this was placing undue pressure upon both the teachers and the learners.

... it's insufficient ... because although the teachers have got the format, the way it's been programmed on that format, there's not enough hours in anyone class, or any one stint, to complete it. Not to complete it and understand it fully. ... like I said, the teachers aren't being given enough recognition, they're not being given enough time ...

A problem related to the homework problem was the difficulty participants experienced in getting together to complete group learning activities. Paul Willigenburg has already commented (above) that he authorised some groups to spend some work-time on their projects. Nevertheless some participants experienced difficulty fulfilling this requirement of the course.

> *... maybe if we had a four hour class and the first hour we spend on whatever. I don't know, that may be one way out of it. But we need something, ... it just seems hard in working time, to get together. Then out of hours people have different things to do and working different shifts doesn't help things.*

Another participant noted that even when permission has been given for small group get togethers on the shop floor, it is difficult to organise the time and the participants without compromising their work and productivity.

> *But it's the hardest thing, getting together to do it. One might work here, one works in warehouse two, you know.*

It would seem that there are two inter-related issues here:

- First, is there sufficient classroom training time to adequately cover the proposed curriculum? One of the purposes of the pilot program was to assess such factors and the consistency of feedback on this issue suggested the need for some revision of the curriculum even before the pilot program was completed.

  This review has already commenced and resulted in some changes. Whilst the emphasis on learning in small groups and pairs has been retained, program activities have been re-structured to minimise out-of-class written tasks and to provide more class-time for pair and small group activities.

- Secondly, before subsequent programs commence there should be a clear understanding about how much out-of-class time participants are expected to contribute in order to complete the program - and clear understandings about whether this will be work-time, unpaid time or a combination of both. These are issues which need to be fully discussed and clarified during Steering Committee meetings, and be subject to industrial agreement.

Industrial Agreement - The Next Stage

The concerns about homework and out-of-class activities were not the only concerns raised by the union. Concern was also expressed about the need for an ongoing industrial agreement to frame the whole of the VIC, not merely the pilot project. This was yet another sense in which time was an issue, as Alan Barlow noted:

> *For me now, ... as a shop steward, ... what I want* [to know], *is how many classes does it take to do the VIC, the whole VIC? How many? Is it 28 or 30 or whatever, to take to the people; and at what stage do they get this pay rise? This is what people's askin' for now.*

Whilst this was not a concern about the pilot program, it seems that the development and conduct of the warehouse program has heightened awareness and raised expectations regarding the VIC. Alan and Fred stressed their members' interest in having a clear picture of the expectations and the benefits.

> *That's the biggest issue, because people are saying how long is it going to take. Two, three years? Look just for example, if it's going to take two and a half years; OK how much money am I going to get after two and a half years?*

Questions such as these highlight the need for an industrial agreement to frame the continuing development of the VIC at Nissan. When interviewed about the project, Paul Willigenburg was well aware of this need. He felt that continuing the impetus developed through the pilot project was a major challenge.

> *The big challenge, from my point of view, and their point of view, and in the future - is to keep this thing going. ... At the steering committee meeting which is coming up, I will be saying, somewhere soon we've got to start the process of discussing how does this pilot group continue through the VIC, that's one. And two, when can I start the next group?*

Discussions with the State Office of the union also confirmed the importance of the next generation industrial agreement on training at Nissan. Union officials suggested the re-negotiation of such an agreement is a high priority for the union. David Smith noted also that the company appeared to have shifted its position in relation to training.

> *... whereas before it was "No. ..." then "Maybe." and we would try to build on the "Maybe"; now it seems different. The company have seen the value of* [this] *training and they want more of it. ... The company now seem to perceive that they are going to get something out of it and we are seeing the issues more jointly. I think the company now has a better understanding of where we were coming from in the first place.*

Following the completion of the pilot program, the company and the union re-negotiated the industrial agreement to cover continuing training at Nissan NPDC. The new agreement built on the experience that had been gained and provided for further development of integrated training based on the approaches demonstrated in the pilot project.

Adjusting the Syllabus

Another outcome of the project was the way in which the original VIC knowledge syllabus was refined. The Pilot Program at Nissan NPDC incorporated subject matter which was not part of the VIC Warehouse elective. In particular, the Nissan program covered the following areas which were not in the original syllabus:

- Supply
- Receiving Stock
- Orders
- Picking
- Shipping
- Dealers
- Replenishment

Accreditation of the redesigned VIC Warehousing elective to cover the new content, is anticipated. At time of writing, appropriate documentation has been prepared for the Office of Training and Further Education.

Changing Workplace Culture and Future Benefits

After only a few weeks of a relatively small scale pilot project it is wise to be cautious in naming, or claiming, changes in the workplace culture. Nevertheless, the involvement of key stakeholders, including managers, and the high level of interest and ownership shown in the pilot program suggests there is a shared vision developing at Nissan NPDC. Part of this vision is training, and the place of training in the company's agenda for change. It seems that all the key stakeholders have a strong sense, not only of the curriculum content; but of the purposes, some possible delivery methods, and the desired outcomes of their training program. This solid foundation bodes well for the future of integrated training at Nissan. Paul Willigenburg has already indicated his desire for future training initiatives to follow an integrated approach along the lines demonstrated by this pilot program.

Considerable evidence has already been presented on the impact of this training in terms of shifts in the workplace culture and its future benefits. Nevertheless, it is worth highlighting the perception that the stakeholders share - that this type of training will affect shop floor behaviour and workplace practices in positive ways. Christina Miller reiterated the themes discussed above when she talked about the benefit to the company:

> *... maybe the company will get a benefit because people may be a bit more aware of what's going on. Like I know ... when I first started it was just, I came in and it was just a routine I was in. But now you can see where your job fits into the next person's and the previous person's, and you're a bit more aware of what's going on, and the precautions you need to take.*

The issue of responsibility was central to Paul Willigenburg's comment on the outcomes he expects from the program. His vision for the future sees shop floor employees taking increasing responsibility within their workplace - and with that increased responsibility-enhanced workplace relations, improved quality of customer service and a more satisfying and rewarding working life. He wants to be reassured that he's not "whistling in the wind" when he talks about the importance of quality. To date he believes the indicators are positive and he is confident the participants in the pilot program do appreciate the course and its implications.

> *When it's all finished, hopefully these people* [will be] *coming back to me and saying, "We want to monitor picking errors, and this is how we've decided to do it." Rather than it be me the one that drives everything, ... they embrace it and say "Yeah, but we want to do it our way."*

Paul stressed that it is perhaps too soon to see such changes on the shop floor, but he is happy with the indicators to date.

> *Now after eight weeks or so, it's a little bit early to see that yet. I'm just happy from what I'm seeing in the classrooms, I'm quite happy with that.*

He was also surprised by the way in which the participants embraced the program. He feared that the project, however well intentioned, would not get off the ground.

I was getting a bit terrified before it started, because I thought they might turn on the whole thing and say "I don't want to do it." Or after class one, they would decide not to do it.

Whilst Paul had feared he might be left with a "white elephant", this has not proved to be the case. As a manager who had offered support to the program right from the beginning, despite some misgivings, he was pleasantly surprised by the outcomes.

I've been more [with emphasis]*more than pleasantly surprised with what has occurred. You just have to go across into the classroom itself and see people in there, who don't normally interact with each other here, but they do over there. And they've done things over there, it's not as if I didn't think they were capable of doing it, it's just that I didn't think they'd want to. That's probably the most pleasing thing that I've got out of it.*

Paul stressed the importance of seeing the pilot program, as part of broader changes in the workplace culture and its practices. The educational focus of the VIC warehouse program is thus sensitive to and contributing to these change processes.

When you talk about dramatic change, the very fact that those people are there is testament to a dramatic change in this warehouse, ... there is no way known that even eighteen months ago we could ever have even sat down with them, to even contemplate anything like this, because they just would not. ... So I make the point that this could not have happened eighteen months ago. We were already working to it and changing things in the workplace already. This is just a part of that change, workplace change.

In summing up on the program Paul Willigenburg was confident that both the individual employees and the company would benefit from the type of training demonstrated through the pilot program. He felt that the key factor in the pilot was the way the consultative curriculum development processes enabled the multiple needs of the stakeholders to be woven into a single program. He was impressed by the way the pilot program was designed around the particular requirements for Nissan NPDC, yet mindful that this design was not based on any one person or sector's perception of those needs, but rather a compilation built on different perspectives.

I guess the most important thing, the thing I'm happiest about the most, is that this whole thing has been tailored to meet this operation. Right, so it does fit in with what the VIC is all about [but] *it's specific to this operation, it's important to this operation. ... I think that's the most important thing. And it includes all the vital elements that the shop floor people, our personnel people, senior management and our warehouse management all thought were important. So it has all those ingredients in there, meshed together.*-

Chapter 12

Team Member Two Training at Toyota Press Plant, Altona

From a shop steward's point of view, compared to the other systems we've been using, my opinion is [this is] *better - a lot more input into the training, the people actually feel part of it, rather than just going up there and listening to the teacher and then coming back out here ... now people feel part of the thing and they've got the self satisfaction 'cos they actually do it themselves.*

Ufuk Eren
AFMEU Shop Steward
Press Shop

12.1 Background

Existing Training System at Toyota

The VIC at Toyota is structured in three levels which follow the pay progression structure of the corporation. These levels are Team Member 1, Team Member 2 and Team Member 3.

New Employees commence their VIC with eight hours of induction training. This is followed during the first three months, by five off-the-job training sessions each of two hours. During this period there is also one day of structured on-the-job training. Together these training sessions cover the initial requirements for occupational health and safety, as well as an introduction to the Toyota Production System and the structure and organisation of the company. After successful completion of both on and off-the-job training, the new employee is admitted to Team Member 1 level.

Existing employees must complete both the knowledge units (off-the-job) and the on-the-job training at each level in order to progress through the pay structure. This involves successful completion of classroom modules and competency based tests for the on-the-job skills.

At Toyota, there is no recognition of prior learning (RPL) for knowledge units of the VIC. There is a Credit Transfer system whereby some employees are given some credit for previous Toyota training. To date over 600 Credits have been given through this system. The company is currently developing a comprehensive RPL process which will cover the knowledge training for the VIC.

To date however, most employees who have been given RPL for their on-the-job skills must still complete formal knowledge training up to that level. This is called "Catch-Up Training". Once employees have completed their Catch-Up Training they may volunteer to undertake "Progression Training" to reach the next pay/skill level.

Once again, advancement depends upon the successful completion of both formal knowledge and on-the-job skills training.

VIC knowledge training for Team Member levels 1, 2 and 3 covers 128 hours of the core curriculum of the VIC. A Toyota Training Matrix has been developed to show which VIC Knowledge Units are included at each level.

Delivery of Training

VIC training at the Altona plant is structured predominantly in short modules of two to four hours, with a few modules taking six, eight, or ten hours to complete. Training sessions are usually one to two hours in duration. Group leaders in each department nominate one or two employees to attend each session.

Classes are given in normal working hours and so only a few employees at a time are released from each department to attend training. The employees join with those from other departments (ie. Engine Plant, Press Plant, Foundry) to make a group for that module. These groups are generally small, usually three or four people, occasionally only one or two. However sometimes larger groups are organised for 'block release' from particular departments, in these cases groups may comprise12 -15 employees. About 20% of training is done on block release.

More usually, however, the training group is not maintained beyond that particular module. Thus, within each level of training, there is no particular sequence in which modules are taken. Employees attend whichever module is on offer at their level as they are able to be released from production. Whilst group leaders are aware of the training schedule, communication difficulties often mean that employees may recieve very short notice of their involvement in training sessions. As a consequence they may not know:

- in advance that they will be going to training;
- what topic they will be tackling; or
- who their classmates will be.

These are some of the consequences of the training system implemented at Toyota to cope with the large volume of training to be delivered and the large number of employees who wish to participate. Toyota management stress that the company has a 98% participation rate in VIC training. The logistical problems of catering for such large numbers, combined with the limited opportunities to deliver training outside of normal working hours have resulted in inconsistent groups for much of the VIC training.

Only some special courses at Toyota are organised differently. Courses such as the Quality Circle Leaders Course, the Standardised Work Course, and Job Instruction Course, are run with dedicated classroom groups.

As part of the continuous development of its training system Toyota agreed to a proposal from NALLCU that a trial of the newly developed Learning Needs Assessment (LNA) process be conducted within the company. Terry Collison from the Altona plant had been involved in the design and development of the LNA process. After some discussion it was agreed that the site for the trial would be Altona.

The LNA identified some of the difficulties associated with Toyota's existing training system and cited the formation of dedicated groups for training as a key issue:

> "One of the major features of the Toyota VIC training appears to be the lack of continuity of groups. This puts a strain on trainers who have different groups every time they conduct any training which forces them to act as the sole learning resource for all employees. It means that a prescribed amount of content has to be covered and assessed in one session. It does not allow for:
>
> - on-going peer support;
> - group learning and the synergy which develops over time with a learning group;
> - the gradual building of basic skills over time;
> - logical sequencing of modules for individuals;
> - re-visiting of areas of curriculum to reinforce learning outcomes;
> - assessment of the retention of knowledge and skills acquired;
> - linking training to changes in shop floor attitudes, behaviour and practices through work-related projects of any substance."
>
> (*Results of Learning Needs Assessment: Toyota, Altona.* p.16)

Training personnel at Toyota were keen to see some changes in the organisation and delivery of training. The results of the LNA tended to confirm the need for these changes. The discussions which took place with production managers at the Altona plant around the implications of the results of the LNA of their employees set the scene for a favourable response to the NALLCU proposal for an Action Research Project to develop an Integrated Model at the plant.

Union & Employee Response to VIC at Toyota

The company policy of conducting Catch-Up Training before any Progression Training was offered, the time it took to develop and deliver all that training before anyone could progress to the next level and the way in which training was provided in small time slots to fit production schedules, has resulted in slow progress through the VIC (and the related pay structure) for employees. As one of the participants in the Pilot Training Program commented:

> *The one criticism I've got against Toyota is they've been very slow with the VIC. Now in some of the plants* [in other companies] *they've got their VIC certificates, but at Toyota, at Altona, we haven't had one person, not one person in the organisation's got a VIC certificate. ... The training modules have been a long time coming. Compared to other companies they're leaving us behind. But the practices that we do here, you're looking at world best practice, but they haven't moved us up the scale, the pay scale for the VIC training. Our VIC training should be at the forefront of training.*

This shop floor perception of slowness was echoed in comments from David Ablett, the Education Officer with the state office of the union. He argued that whilst Toyota entered into an agreement in relation to training in 1989 the company's implementation of training programs in line with the agreement was extremely slow. Toyota's response, he argued, failed to ensure sufficient Progression Training and therefore disadvantaged many employees who were unable to access pay increases. However David acknowledged that the company was training trainers and assessors. In this context it is hardly surprising that when the Pilot Program was first mooted, employees saw it as providing a way of progressing through the pay structure.

Whilst the union were critical of delays in providing training, and sceptical about the value of some training initiatives with TAFE, they were more optimistic about prospects for the future of training at Toyota. In particular David Ablett referred to a Progress Report on training recently presented to, and accepted by, the Arbitration Commission.

> *... we're positive about it, we're very happy about the outcome of that because it provides for the expansion of integrated types of training across other sites, and it provides for ... recognition of prior learning, mechanisms to pilot that, ... for access to level three wages, which was a stumbling block as well. The company is going to provide for more flexible provision of on and off-the-job training; and training progression structures in each area are being up-dated and stuff like that.*

12.2 Proposed Project for an Integrated Model

When the offer was made to Toyota, in late February 1993, of assistance with the development of an integrated model for one elective area (to be nominated by the Company) of the VIC, there was agreement that this was a good idea and in line with directions already established for the Company. The stumbling block was the notion of using an elective area for the pilot program as this did not fit with the VIC progression model developed by Toyota.

It was agreed that discussions would proceed and a further meeting was held in late March with the inclusion of staff from the Western Metropolitan TAFE College who were undertaking the concurrent curriculum project with the Company. As there was no conflict between the two projects, which were seen by the Company and the College as complementing each other, it was agreed by the Training & Development Staff that they would proceed to the next stage of selecting an area for development. Initially, the Paint Shop at Port Melbourne was suggested as a suitable site.

At a further meeting in May it was decided that the area to be developed would not be an elective area but the level 2 of the VIC for one specific department at the Altona plant. This plant was chosen because of the groundwork done through the conduct of the LNA at that site late in 1992 and the good feedback there had been from production managers. As discussed above, many of the educational issues had already been canvassed as a result of the LNA and this was seen as an advantage.

The proposal to proceed with a model in the Paint Shop was dropped because a new Paint Shop was due to open at Altona within 12 months which would incorporate new robotic and water-based paint technologies. Any training which was developed for the existing Paint Shop at Port Melbourne might thus have a limited applicability. The logistics of conducting the pilot program at Port Melbourne during the time the new Paint Shop was being established were also seen to be problematic.

It was agreed that the curriculum would be targeted to integrating skills and knowledge and would include the VIC units at level 2 as prescribed in the Toyota Training Matrix. It was also agreed that overtime would be paid for attending clases outside of normal working hours.

The next step in the implementation of the Pilot Program was taken at a meeting, held in late June with the management at Toyota Altona. A proposal was presented and was favourably received. Agreement was reached in early July that the project would proceed using the Press Shop at the Altona Plant for the Pilot Program. For various reasons it was not until 23 August that the Project started officially, exactly six months after the initial discussion took place.

12.3 Establishing the Project

In line with the operation of each of the Projects, a tripartite steering committee was established, a project brief drafted and agreed, and a project team appointed to undertake the development and trial of the curriculum materials.

Project Steering Committee

Initial membership of the Project Steering Committee included:

Kevin Urfurth - Press Shop Manager (Chair)
Serge Beani - Production Manager, Press Shop
Bob Pulford - Senior Coordinator, Human Resource Development
Doug Hardie - Organiser, AFMEU (Vehicle Division)
David Smith - Work Change Adviser, AFMEU (Vehicle Division)
Ufuk Eren - AFMEU (Vehicle Division) Senior Shop Steward, Press Shop
Robin Sefton - Manager, NALLCU
Rosemary Deakin - Curriculum Planning Officer, NALLCU
Peter Waterhouse - Curriculum Officer, NALLCU

The Project Team also attended meetings which were conducted regularly throughout the Project. Doug Hardie left part way through the Project and Kevin Urfurth handed over the chair to Serge Beani after the first few meetings. The inaugural meeting was held on 17 August 1993.

Project Team

Richard Cooney	-	Curriculum Officer, NALLCU
Julie Hawkey	-	NALLCU Coordinator, Toyota
Terry Collison	-	Human Resources Trainer, Toyota Altona

Richard Cooney joined the Team with 5 years shopfloor experience in the Printing Industry (as a commercial artist and platemaker) and 12 years experience as a Teacher of Primary and Junior Secondary. Richard's teaching experience included 4 years as an ESL and LOTE Teacher, and experience writing mathematics curriculum for Primary Schools.

Julie Hawkey came to the Team with 10 years teaching experience in Adult Education and ESL. Julie had spent 8 years working for English In The Workplace (EWP) Programs in a variety of enterprises and industries, and was the Language Coordinator at Toyota Port Melbourne and Altona.

Terry Collison had many years experience as a workplace trainer at Toyota.

Project Brief

The Project Brief specified the agreed aims, objectives, processes, respective responsibilities and timelines for the Project. The Aim was:

To design, develop, trial & evaluate an integrated training model which:

- is specific to the Press Shop at Toyota, Altona
- focuses on the Core Modules in relation to the Skills Units (on-the-job training) at Level 2 of the VIC
- evolves through a process of active participation, consultation and collaboration between management, employees and union representatives in the Press Shop.

The Brief also clarified respective roles and responsibilities of the Company and NALLCU. One of the conditions written into the Brief was the agreement that a dedicated group would be formed for the purpose of trialing the curriculum.

The industrial issues surrounding the formation of this group, its composition, times of training and payment for training were referred to the industrial parties for resolution. The question of times for training were also negotiated directly with the Project Team members by the industrial parties.

12.4 The Altona Press Shop

The Press Plant at Altona produces pressed car body panels for the Camry and the

Corolla range of passenger motor vehicles. The plant has 6 press lines. The "A" Class and the "B" Class lines operate 1,000 tonne presses, whilst the "C" Class lines operate 500 tonne presses. Four of the six lines have automated panel transfer systems.

Production workers in the plant are organised into 8 work teams. There is a team responsible for each press line in the plant, a team responsible for shearing and material preparation, and a team of die setters who prepare the lines to run each job. There are 42 people who work on the day shift in the press plant, and 38 people on the afternoon shift.

Steve Stogian a team leader and Shop Steward at the Press Shop pointed out the impact of new approaches to work organisation and new work practices at the Press Shop. His comments on the importance of a commitment to training and continuous improvement reflect the workplace culture developing on the shopfloor:

> *... if we don't upgrade our skills we'll be left further and further behind. This is world best practice that we're doing here. We've got to get around this concept that we can do it, and we can compete with the best in the world. Now any amount of training that we do that's related to the work we do - to some people it sounds like it's boring, but it's not - it's really building an understanding of what you do and you realise what you've got. ... What's happening now with Toyota at the Press Shop is technology at its latest, you know because five years ago, four years ago we had over 130 employees here. Now we're down to forty,* [on the day shift] *really it's getting less and less. So if we don't upgrade our skills and do these courses, to know what's happening, to be up to date, or what the next stage after this is, you know, we'd be working blind, we'd never be competitive in the twenty first century.*

12.5 The Press Plant Pilot Program

Curriculum Development Process

The members of the Project Team were asked to develop a training program which "evolves through a process of active participation, consultation and collaboration..." (Project Brief). The Project Team thus saw the development and delivery of the training program as a process of participatory action research where the curriculum development represented a specific intervention in the systems of the company. The goal of the process was to develop the learning of the Project Team, the Company, and the Union, about workplace education and training.

This learning had to take place at a number of levels:

- The individual and how they learned best,
- Curriculum development and how that may best be done, and
- The training system and how that may best be organised to promote organisational learning.

At each of these levels, the hypothesis " ... that participatory action research enhances problem formulation, hypothesis formulation, data acquisition, data analysis, synthesis, and application."[1] was being tested.

In order to develop and deliver the training, the Project Team had to consider the combined effects of a number of systems. They had to consider:

1. The technical systems of the plant (the presses and their tooling),
2. The production control systems of the plant (material and stock control, production scheduling, quality control, etc.),
3. The systems of work organisation (the Departments, the Teams, individual roles and responsibilities, etc.) and
4. The social and communication systems of the plant.

Through work on the development and delivery of the training, the members of the Project Team learnt how these systems worked and how to work with these systems to promote learning.

The members of the Project Team thus immersed themselves in the life and work of the Press Plant, in order to gain an understanding of that which they were to be teaching. The members of the Project Team were given the use of a small office on the floor of the Press Plant, adjacent to the 1A and 2C press lines. By working from an office on the shop floor, team members quickly became involved in the working life of the plant and soon came to terms with its complex operations.

In order to understand the existing learning culture of the Plant, the Project Team began by looking at the training that was occurring in the Press Shop. The team looked at the Toyota Training Matrix, the relevant VIC modules, the on-the-job skills profile of the Press Plant, previous training documents used in the Press Plant and materials developed as part of the joint Toyota - Western Metropolitan College of TAFE project.

Team members then began investigating particular aspects of the work of the Press Plant. This involved collecting and analysing records and documents, collecting and analysing information given by employees, observing work and work procedures and discussing these with plant personnel and finally researching technical information in libraries and resource centres.

Project team members began the curriculum writing with the belief that the work task to be studied by the participants needed to be understood in terms of the operations of the entire plant. Thus, the task was to study how sheet steel is transformed into pressed body panels within the plant. The learning task was not to study particular jobs, particular operations, or particular procedures, but rather to gain an overview of plant operations at the level of the VIC. By studying the transformative processes of the plant, the curriculum was led into the detail of jobs, operations and procedures, but these were always synthesised in the primary task of the Press Plant.

Using their knowledge of plant operations the Project Team identified four key areas of the work of the Press Plant. It was decided to structure the integrated training around these areas:

1. Kanban control system of Just-In-Time Manufacturing;
2. Quality Control Procedures, Defects & Reworks;
3. Die Changes
4. Team Work.

The curriculum design adopted in the Pilot Program thus came to reflect the systems of the plant referred to above. Study of the technical system at Team Member 2 Level was to be found in Unit 3 Die Changes, study of the production control system was to be found in Units 1 and 2; Kanbans and Quality Control. Study of the work organisation was to be found in Unit 4 Team Work.

The curriculum development work involved Project Team Members moving from abstract conceptualisations of the work of the plant to the concrete details of that work and back again, constantly. The work of "problem formulation, hypothesis formulation, data acquisition, data analysis, synthesis, and application" was constant.

The learning design of the Pilot Program was based upon experiential and activity based learning[2]. Employee members of the Pilot Group were asked to participate in workplace based activities where they had the opportunity to demonstrate and develop multiple competencies. Whilst learning technical skills, for example, employees were also learning communication and team work skills. Participants were invited to report and reflect upon activities in multiple dimensions.

To take one example, the bolster of each press contains a die cushion. Cushions supporting panel shaping dies have pins which help to hold the body panels in the correct position for stamping. One of the tasks trainees were required to learn was how to set these pins correctly in the bolster. This is called "cushion pin setting". To learn cushion pin setting, participants worked in pairs. One person gave instructions which were generated by reading and analysing a Cushion Pin Layout, whilst the other person had to interpret those instructions and correctly select and set the cushion pins. Participants were then asked to reflect upon the activity by discussing the following questions:

* Was the task achieved - were the cushion pins set correctly (a technical skill learnt)?
* How was it achieved - were clear and correct instructions given (a communication skill learnt)?
* How does this task relate to the operation of the plant - what is the role of the cushion pins in panel shaping (synthesis of learning)?

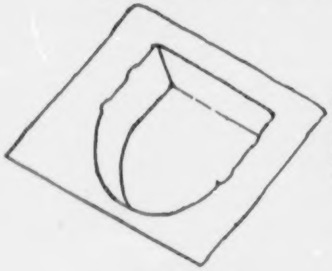
The competencies developed and displayed by participants in such an activity were various and varying:

* Many participants had difficulty reading the Pin Layouts and so some time was spent teaching basic coordinate geometry;

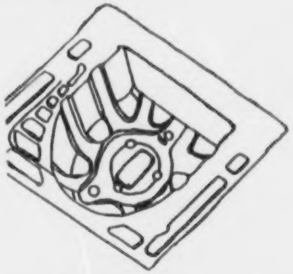
CUSHION PIN LOCKING SYSTEM

WHY WE USE IT

SOME PANELS REQUIRE A SECOND DRAW TO FULLY SHAPE THE PANEL.



1st DRAW
FORMS INITIAL SHAPE

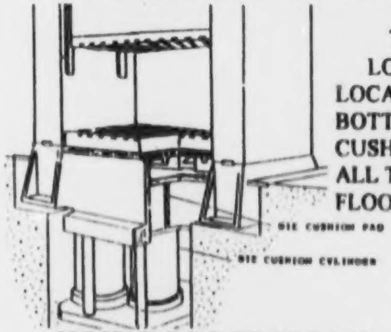


2nd DRAW
COMPLETES FORM OF PANEL

WHAT IS CUSHION PIN LOCKING

CUSHION PIN LOCKING IS A WAY OF HOLDING THE CUSHION PAD AT THE BOTTOM OF THE STROKE WHEN THE PRESS IS CYCLED.

WHERE IS IT LOCATED

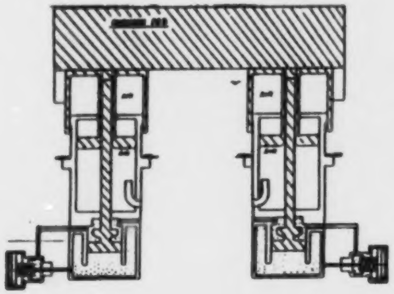


THE CUSHION PIN LOCKING SYSTEM IS LOCATED AT THE BOTTOM OF THE DIE CUSHION CYLINDERS. ALL THIS IS UNDER FLOOR LEVEL.

HOW DOES IT WORK

THE CUSHION PIN LOCKING SYSTEM WORKS BY CLOSING A VALVE AT THE BOTTOM OF THE STROKE.

THIS TRAPS THE HYDRAULIC OIL IN THE UPPER CHAMBER AND HOLDS THE PAD DOWN WHEN THE SLIDE RAISES.



- Some participants who worked in die setting and who already knew how to set cushion pins developed their competence in giving and receiving instructions;
- Others learnt why the shape of the Pin Layout mimicked the shape of the panel; and so on.

Participants were able to integrate knowledge and skill learning in the activity, and they were able to both consolidate existing knowledge and extend their learning into new areas.

As a result of the discussion about the role of cushion pins, for example, one participant chose to investigate the operation of the cushion pin locking system on the presses. This became that person's Research Project (see opposite page) for the course.

The experiential learning in the training program consisted of :

- Structured activities (where participants were given information, data, tasks and roles),
- Semi-structured activities (where participants were asked to generate some of the information, data or roles for themselves) and
- Self-directed activities (where participants developed a topic for themselves which they then investigated individually or in small groups).

This experiential learning design thus engaged the participants in the Pilot Program in active learning. They too became engaged in "problem formulation, hypothesis formulation, data acquisition, data analysis, synthesis, and application"[3].

The completion of the Pilot Program was marked by the participant's presentation (in front of workmates and managers) of their major self-directed activity, the Research Project.

The Project Team developed an outline of the curriculum design and the learning design for the integrated training, which went through several revisions and to several Steering Committee meetings. The final version of this outline is reproduced below. The development of these Curriculum Outlines reflected the learning of the Project Team and the Stakeholders represented on the Steering Committee, about the development and conduct of integrated workplace training.

Curriculum Outline - TM 2 Training

1. Introduction - Kanbans (8 hours)

Follow Kanbans for 1 panel as it goes through the plant. From materials (sheet steel) to dispatch.

Purposes:

1. Gain an overview of the plant;
2. Allow participants to introduce themselves by talking about their workplace;
3. Commence writing activities by writing about the familiar and the known.;
4. Commence a simple investigation of the workplace;
5. Practise discussion techniques in the group;
6. Introduction to JIT Manufacturing Systems.

Activities:

- Investigate the making of 1 panel
- Writing and conferencing of writing
- Critical reporting
- Presentation of investigation of one kanban

2. Quality Control - Defects and Reworks (12 Hours)

Purposes:

1. Spotting defects - types of defects, methods of detection, probable causes, action to be taken, use of Quality Check Sheet.
2. Quality Procedures - Quality Check Start-up, In-process inspection, Team Leader inspection.
3. Reworks - on line/off line procedures and documentation, types of equipment and its use to repair defects.
4. Investigation and Reporting - using cause and effect diagram.
5. Principles of Iron and Steel Making

Activities

- Locating and naming defects on panels - analysing causes
- Completing HOLD Tickets and reading Quality Check Sheets
- Completing Zone Checks
- Constructing a flow chart
- Using rework equipment
- Constructing Cause and Effect Diagram
- Examining ore samples
- Performing tests on steels in the QA Lab
- Investigation of material causes of defects

3. **Die Change and Minor Maintenance (8 hours)**

Purposes:

1. Die setting, machine setting, setting accessory equipment.
2. Internal die change.
3. External die change.
4. Reporting die and maintenance problems and suggesting counter measures.
5. Coordination with other areas of the plant (Plant Services, Die Maintenance).
6. Investigations of Die Changes. Collection of data. Presentation in different formats

Activities:

- Practise cushion pin layout
- Practise die height setting, cushion pressure setting
- Checking and reporting correct machine settings on a line
- Presentation of invesigation
- Practise completion of Die Maintenance Cards

4. **Team Work (8 hours)**

Purposes:

1. Organising work, decision making, goal setting (e.g. assessing labour requirements, organising the supply of raw materials etc.).
2. Recordkeeping (e.g. calculate SPH, Daily and Weekly Control Charts, Scrap etc.) Control Charts and Histograms.
3. Participating in meetings - running a meeting (Pallet meeting, HR Meeting, H&S Meeting, Productivity Meeting, Suggestion Committee etc.) meeting skills, effective listening, team decision making, goal setting, barriers in teams.
4. Accident reporting, actions taken. Health & safety in the plant.
5. Other forms (leave forms, suggestion forms etc.)

Activities:

1. Using plant documentation to practise organising the work of a shift.
2. Attending a plant meeting, and practising minute taking.
3. Using cause and effect diagram to prepare an accident report from a hypothetical accident scenario.

5. **Presentation of Students Research Projects (2 hours)**

This curriculum outline set down the major topics to be covered in each unit and outlined the major learning activities to be conducted for each topic.

With this curriculum outline, developed from the experience of the workplace, the Project Team were able to map the curriculum onto the knowledge objectives and stated competency requirements of the VIC. The requirements of the VIC Syllabus, the team discovered, could be more than adequately achieved by workplace based activities.

It was not at all necessary to start with the VIC Syllabus and plan a program designed to teach the syllabus - the syllabus was already there in the experience of the workplace. Hence the Project Team were able to develop a learning program which accurately reflected the work of the plant and the demands of the VIC.

The collaborative processes employed in curriculum development actually helped the Project Team to accurately reflect the competency levels of the VIC in the Pilot Program. The variety of viewpoints expressed about the work of the plant, from the range of people consulted, assisted members of the Project Team in their work of identifying the key features of the plant; it meant that they had to think through, and synthesise for themselves, the competence required to carry out particular tasks and work in particular jobs. With this detailed knowledge of the plant, and knowledge of the VIC Syllabus, the task of matching the two was relatively easy.

The access of Project Team members to all areas of the plant, and the cooperation received from all areas, not only facilitated the development of the curriculum, but also appropriate assessment processes. Practical and activity based assessments were able to be conducted, because people in the plant besides the participants (ie. co-workers, supervisors and managers) knew and understood the competence required to carry out assessment tasks, and so could readily see the learning and development that had taken place with individuals.

The curriculum writing processes, and the resulting curriculum, learning activities and assessment procedures, were all monitored by the Project Steering Committee. The Project Team were responsible to all stakeholders through this committee, and all the stakeholders came to understand the way the curriculum, the curriculum development process and the training program, promoted real broad-based skill development for the participants in the Pilot Unit.

The Pilot Program

The curriculum outline developed by the process described above provided the framework for the development of the learning activities. The VIC modules that were included in level 2 on the Toyota Training Matrix and the integrated thematic units were:

Table 10 Level 2 Entry

VIC Unit No.	Topic	Hours
1.8	KYT Danger Prediction Training	2
4.6B	Pareto/Cause & Effect Diagrams	4
6.3A	Discussion Techniques	2
6.4	Team Goal Setting	2
6.6	Recognising Barriers in Teams	2
	Total	**12**

Table 11 Level 2 Pay Point 1

VIC Unit No.	Topic	Hours
4.2B	JIT Manufacturing	6
4.6C	Control Charts / Histograms	2
6.3B	Meeting Skills	4
6.5	Team Decision Making	4
3.8	Effective Listening	2
3.9	Writing for Specific Purposes	2
6.7A	Introduction to Assertiveness	4
1.2C/1.3B	Accident Investigations	2
	Total	**26**

Table 12 Integrated Thematic Units - Level 2

Unit No.	Topic	Hours
1	Kanbans	8
2	Quality Control	10
3	Die Setting	10
4	Team Work	10
	Total	**38**

The VIC modules in the Toyota Training Matrix were mapped onto the topics to be covered in each of the thematic units of the Integrated Program. This was recorded in a Training Matrix (See next page) for the Pilot Program. Some of the existing VIC units (eg. 6.3 Discussion Techniques) mapped onto more than one of the new integrated units and thus emerged in a developmental learning sequence.

TABLE 13 TRAINING MATRIX: INTEGRATED TM2 TRAINING MODULE PRESS PLANT PILOT PROGRAM

VIC Module		Unit 1 Kanbans	Unit 2 Quality/ Reworks	Unit 3 Die Change	Unit 4 Team Work
1.8	KYT				✓
4.6B	Pareto/C&E Diagram		✓		✓
6.3A	Discussion Techniques	✓	✓	✓	✓
6.4	Team Goal Setting		✓	✓	✓
6.6	Recognising Barriers in Teams	✓		✓	✓
4.2B	JIT Manufacturing	✓			
4.6C	Control Charts/ Histograms		✓		✓
6.3B	Meeting Skills				✓
6.5	Team Decision Making		✓	✓	✓
3.8	Effective Listening		✓	✓	✓
3.9	Writing for Specific Purposes	✓	✓	✓	✓
6.7A	Introduction to Assertiveness				✓
1.2C/ 1.3B	TMCA - OH&S				✓

* Ticks denote VIC Modules covered in Integrated Training Program.

Developing and Extending Skills

Participants had the opportunity to develop and extend their skills over the course of the program. They were no longer expected to achieve VIC learning outcomes in these areas in a one or two hour session, but could achieve them over many sessions. Moreover participants had the opportunity to extend their learning beyond the level of the VIC modules.

Developing discussion techniques (to follow that example) was not now something that participants "finished" within a one or two hour module, but something that they kept developing throughout the full 38 hours of the Integrated Program as they listened to presentations, questioned, discussed and debated issues arising from them.

The Integrated Program also enabled participants to extend their knowledge of the workplace far beyond the demands of the VIC knowledge units. As participants gained an overview of plant operations and began to synthesise many people's knowledge of different areas of the plant (through group problem solving activities) they began to investigate the workplace in greater depth.

As part of the unit on Quality, for example, participants investigated the manufacture and the physical properties of steels used in the Press Plant.

Participants examined and investigated iron ore bearing rocks, the process of iron smelting, the process of steel making, steel alloys, and steel finishing. Participants spent one class in the Quality Laboratory carrying out tests of hardness, tensile strength and formability on various grades of steel used in their workplace.

This knowledge was then applied to a practical investigation of a recurring quality problem in the plant (i.e. of a particular part which had been suffering deformations for over 18 months). One participant then went on to develop this work into a Research Project. The Participant investigated not only the problems occurring within the plant, but also how these problems were linked to the production processes of the supplier of the raw material used to make the part. Upon presentation of this Research Project a manager at the plant commented that he would like to forward a copy of the project to the raw material supplier because it was a comprehensive explanation of the problem.

This type of learning, where detailed knowledge is acquired in order to be applied to the investigation of workplace problems, best occurs where there is a developmental sequence to the learning, and participants in a training program have the opportunity over an extended period of time, to develop their knowledge and make links between the knowledge that they have acquired.

Group Cohesion and Peer Support

The collaborative development process and the results of the earlier LNA highlighted the need for effective learning groups. The development of such groups, and the opportunities that they offer for participants to support each other through learning was thus another critical feature of the Integrated Model being tested in the Pilot Program.

Johnson & Johnson[4] identified seven stages in the development of cooperative learning groups, as follows:

1. defining and structuring procedures and becoming orientated;
2. conforming to procedures and getting acquainted;
3. recognising mutuality and building trust;
4. rebelling and differentiating;
5. committing to and taking ownership for the goals, procedures and other members;
6. functioning maturely and productively;
7. terminating.

The Project Team believed that effective training and workplace learning would be facilitated if training groups had the opportunity to move beyond the initial stages of development. The structure of the learning activities in the Pilot Program were designed to promote this development. Learning activities often extended over two or three classroom sessions, with the whole group coming together, participants, pairs or small groups going off to do some work, and the group coming back together to review what had been done.

The Project Team discovered that not only were there benefits for the Pilot Group in taking this approach, but that these benefits spread out into the plant. Participants helped each other to find people in the plant (a supervisor, an engineer, a manager, a toolmaker, etc.) who may be able to help them with their class work and projects. Participants bought information and new questions back from these people and fed them into the classes. The Pilot Group came to act in some ways, as an extension of the Project Team. They were using similar methods to the Project Team in order to learn about their own workplace. In this sense the members of the Pilot Group were engaged in the participatory action research program.

The nature of this process means that each group will be different, and that the curriculum and learning activities will have to be reviewed and reorganized for each group. New learning, changes to the learning needs of participants, changes in the workplace and workplace procedures, all mean that the curriculum and the learning activities must be constantly updated to reflect the changed and changing experience of the workplace.

Developing Language, Literacy and Numeracy

Employees working in the Press Plant require high levels of literacy and numeracy, in order to be able to do their work safely and efficiently. They are required to:

- Read and interpret Work Standards;
- Read, interpret and complete Quality Records and Quality Standards;

- Attend meetings, read minutes of meetings; and
- Fill out several workplace forms (eg. Die Maintenance Cards, Suggestion Scheme Forms).

These people are also required to be highly numerate. They must be able to :

- Take measurements (eg. read and interpret dials on the presses to set die heights in millimetres); and
- Calculate in several different systems of measurement (time, kg/F (Newtons) for cushion pressures).

Teaching a workplace based curriculum thus involved a lot of language, literacy and numeracy teaching. Approximately half the Pilot Group were from an NESB background, with the first languages of participants including:

- Maltese
- Italian
- Croatian
- Maori, and
- Vietnamese

Over half of the Pilot Group were born outside of Australia. The language, literacy and numeracy needs of these participants, and of other participants (who were, for example, early school leavers) were addressed in the learning design of the program and through the teaching practices employed in it's delivery.

Prospective participants in the Pilot Group were invited to a short 10 minute interview with members of the Project Team, prior to the commencement of the program. The interview was designed to give prospective participants an opportunity to raise queries and concerns of their own about the training.

A short application form was completed during the interview, and discussion surrounding the filling out of the form helped give the members of the Project Team an idea of the applicants experience and areas of expertise. The members of the Project Team were more interested in finding out what people could do and how they had learned in the past, than in somehow 'assessing' their language and literacy deficits.

All the employees who applied for the training were accepted into the program. The interview process was thus not a screening process, but merely an information gathering exercise about existing areas of individual competence. The members of the Project Team were informally gathering a profile of the participants in the program.

The Project Team used the existing knowledge and competence of participants to extend their language, literacy and numeracy learning.

Mention has already been made of the way in which setting cushion pins was used to develop spatial concepts, or setting die heights was used to develop measurement and calculation skills.

Similar approaches were used in relation to language and literacy. The technical terms of the workplace were used to explore and develop language learning and develop language concepts. The presses, for example, are driven by 'eccentric shafts' and time was spent in class discussing the different meanings of the word 'eccentric' and the different contexts in which it may be found. This is but one example of the way in which semantics were continually discussed and debated.

There was no attempt made to simplify the technical language of the workplace. Firstly because the technical language of the workplace is the language of the workplace, and to simplify it is to disempower people in that workplace. Secondly, as the above example demonstrates, the technical language of the workplace often has more semantic content than some plain english equivalent.

The syntactical structure of English was also explored through the everyday terms of the workplace and then compared with participants' experiences of other languages.

The formal description of body panels produced in the Press Plant has its own syntactical structures which are different to those of standard English. A rocker panel is, for example, a 'Member Floor Side Inner Right Hand'. In standard English we might say that it was a 'Right Hand Floor Side Inner Member' How would you express this - syntactically speaking - in Maori or Vietnamese ? Members of the class were invited to discuss such questions and they were equal participants in such discussions because they all had some experience of different semantic and syntactic structures to draw upon.

As well as this conceptual learning about language and numeracy, participants were constantly engaged using language and numeracy to achieve class work tasks. They were asked at various times and in a variety of ways, to present:

- Oral reports;
- Written reports;
- Graphical reports;
- Reflections (oral and written) on group activities, reports, conferences;
- Questions and topics for investigation (oral and written).

The teaching practices which underpinned this style of language and numeracy learning were :

- use of mixed ability groupings;
- modelling of language and numeracy on the whiteboard;
- assisting and supporting learners;
- drafting and conferencing of work;
- using the language and numeracy of the workplace in context.

The key benefit derived from employing these teaching practices, was the development of participants as learners. The members of the Project Team were continually looking for evidence of attitudinal and behavioural shifts among participants. They were looking for participants to develop not only as members of a group, but also as individuals capable of self-directed learning, as individuals capable of thinking critically and of formulating questions which extended their knowledge into new areas.

These behavioural shifts were facilitated by:

- recognising and exploring participants' prior knowledge and prior learning;
- using the experience of the workplace as an reference point for learning;
- modelling learning behaviours in the classroom by using the experience of curriculum writing and program delivery, as an opportunity to extend ones own learning.

Many of the teaching practices described above are used in teaching institutions. What makes their application to the workplace different is the recognition by the workplace educators that they have stepped out of an institution such as a school or a TAFE College, and into a workplace where mature and independent adults are engaged in producing goods and services.

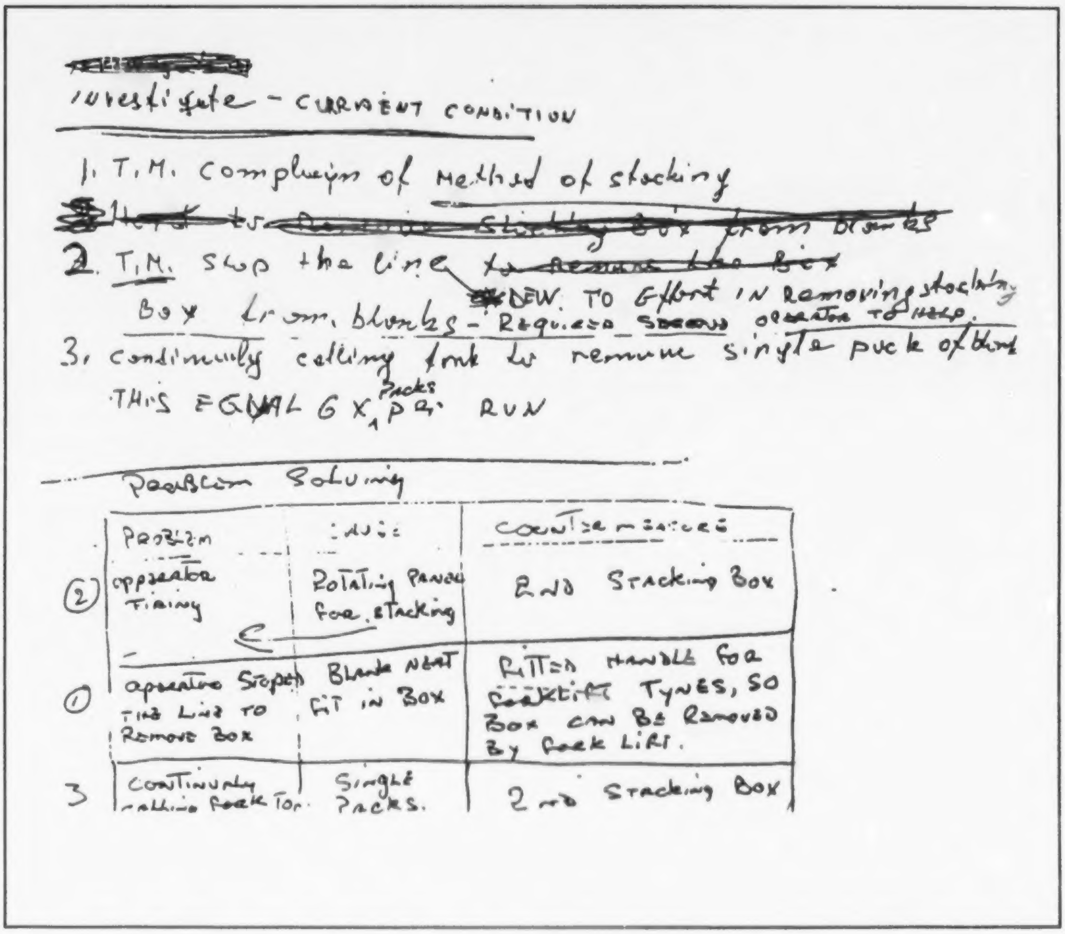
This means that the goal of the workplace learning must be related to the primary task of the enterprise. In other words, the workplace learning should help people in the workplace to do whatever it is that they do better. The learning must not only return to the workplace as a point of reference, but it must also lead to changes in the workplace. In this way, the model of participatory action research fits well with an integrated model of training. The learner develops workplace specific and generic skills whilst learning about and acting upon the systems of the workplace. In this model, there are benefits to both the learner and the enterprise from the training.

The Research Project was the major piece of work undertaken by participants in the Pilot Program. It was their own action research project, and by looking at one of these projects, we can see how the skill development through learning and action takes place.

Ivan is the Team Leader on one of the Press Lines in the Press Plant. He had one particular job which was giving him a lot of problems and so he chose to investigate that for his project. This job required the use of pressed blanks rather than raw steel, and the problem was that production workers had to turn over every second blank for loading the press, as the press produced both left and right had panels from the same blank. Moreover the blanks were a tight fit in the stacking boxes which were used to transport them from the blanking press to Ivan's work area. It required 2 people and a considerable amount of effort, to remove the blanks from the stacking box ready for use.

This then was Ivan's chosen problem and he roughed out his first thoughts about the problem in class. He discussed and conferenced his work with some of his fellow participants, developed his ideas and began to sort out how he might present his project. At this stage Ivan was interested in getting his ideas down on paper, organising them and roughing out a plan of action. Reproduced below are Ivan's first thoughts about his problem.

IVAN'S FIRST DRAFT



~~[illegible]~~

investigate - CURRENT CONDITION

1. T.M. complayn of Method of stacking

~~Hard to [illegible] Stacking box from blanks~~

2. T.M. stop the line ~~to remove the box~~ DEW TO Effort IN Removing stacking Box from blanks - Required second operator to help.

3. condinually calling fork to remove single pack of blanks THIS EQUAL 6 X Packs per RUN

Problem Solving

	PROBLEM	CAUSE	COUNTERMEASURE
②	operator Timing	Rotating Panel for stacking	2nd Stacking Box
①	operator stoped the Line to Remove Box	Blanks not fit in Box	Fitted handle for forklift Tynes, so Box can be Removed By fork Lift.
3	Continually calling fork for	Single Packs.	2nd Stacking Box

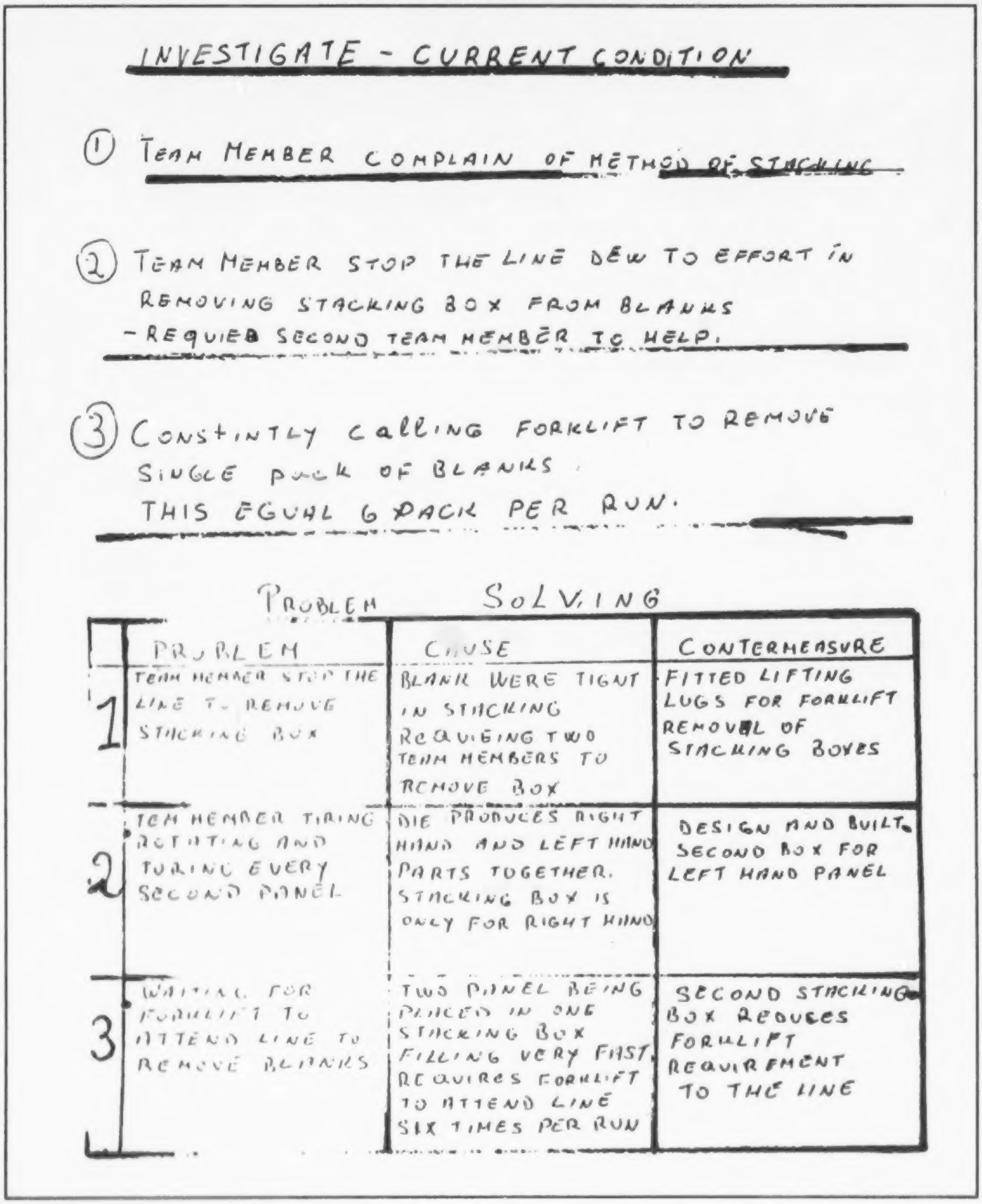
Ivan came back two weeks later with a second draft of his project. He had worked on it some more, discussed it with others in the plant, but more importantly, he had built and experimented with a prototype of the new stacking box and lifting lugs. Ivan's solution to his problem was to:

(a) weld some lifting lugs to the top of the stacking boxes so that removing the blanks from the boxes was no longer a manual handling operation - the forklift could now be used to remove the boxes, and

(b) build separate stacking boxes for left and right hand blanks - again the manual handling involved in the job had been eliminated.

Ivan had calculated the effect of his prototype (a 32% improvement in production on that particular job) and incorporated that data into his project which now ran to 6 pages. He had identified a problem, collected and analysed data, taken action based upon his research plan, and he was now collecting and analysing data about the effects of his solution. Two pages of his second draft are reproduced below:

IVAN'S SECOND DRAFT



INVESTIGATE - CURRENT CONDITION

① TEAM MEMBER COMPLAIN OF METHOD OF STACKING.

② TEAM MEMBER STOP THE LINE DEW TO EFFORT IN REMOVING STACKING BOX FROM BLANKS
- REQUIED SECOND TEAM MEMBER TO HELP.

③ CONSTINTLY calling FORKLIFT TO REMOVE SINGLE pack OF BLANKS.
THIS EGUAL 6 PACK PER RUN.

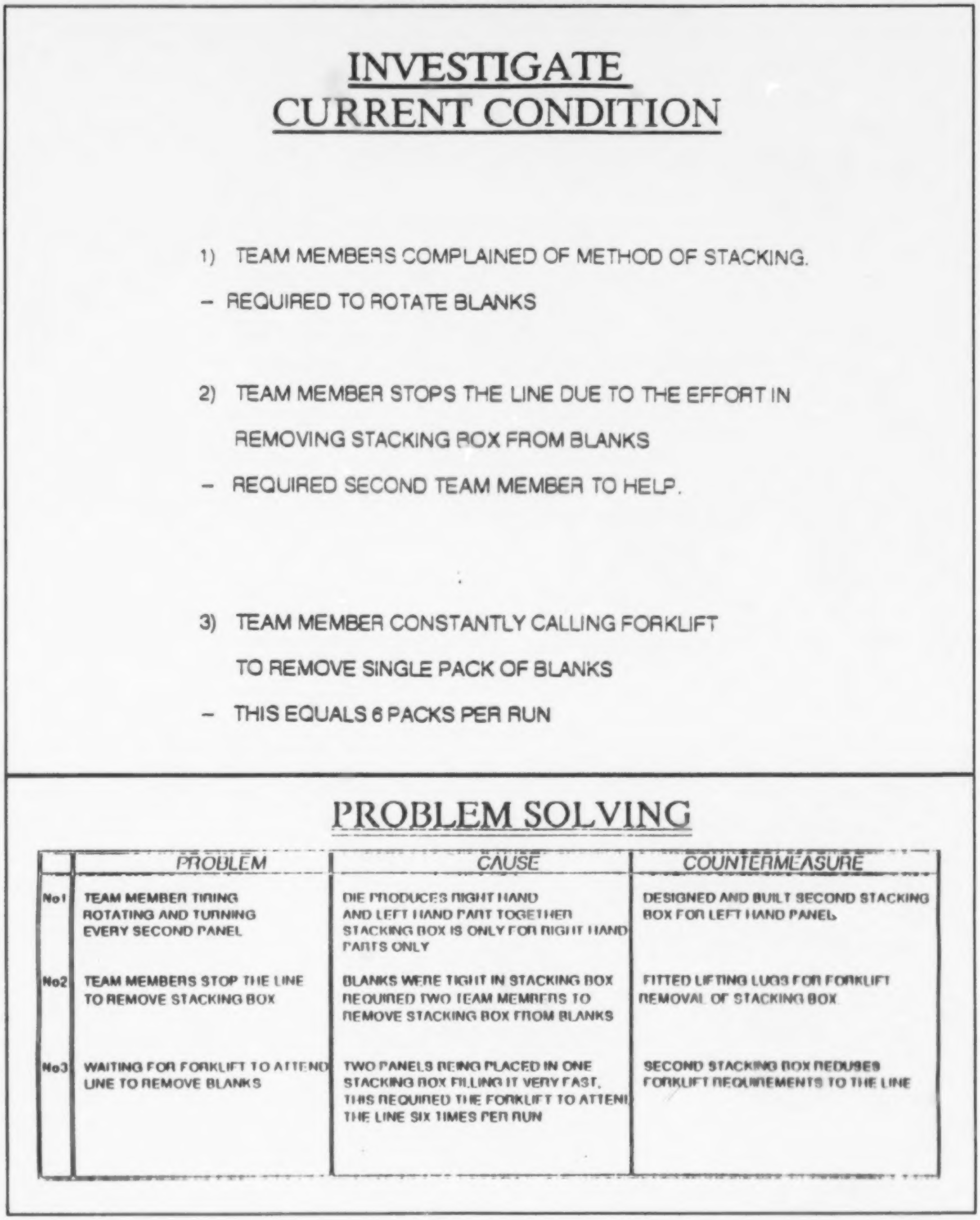
PROBLEM SOLVING

	PROBLEM	CAUSE	CONTERMEASURE
1	TEAM MEMBER STOP THE LINE TO REMOVE STACKING BOX	BLANK WERE TIGNT IN STACKING REQUIGING TWO TEAM MEMBERS TO REMOVE BOX	FITTED LIFTING LUGS FOR FORKLIFT REMOVAL OF STACKING BOXES
2	TEM MEMBER TIRING ROTATING AND TURING EVERY SECOND PANEL	DIE PRODUCES RIGHT HAND AND LEFT HAND PARTS TOGETHER. STACKING BOX IS ONLY FOR RIGHT HAND	DESIGN AND BUILT. SECOND BOX FOR LEFT HAND PANEL
3	WAITING FOR FORKLIFT TO ATTEND LINE TO REMOVE BLANKS	TWO PANEL BEING PLACED IN ONE STACKING BOX FILLING VERY FAST. REQUIRES FORKLIFT TO ATTEND LINE SIX TIMES PER RUN	SECOND STACKING BOX REDUCES FORKLIFT REQUIREMENT TO THE LINE

BEST COPY AVAILABLE

Ivan discussed and conferenced his second draft with fellow participants, with the workplace educators and finally with his supervisor. He was now formalising his project ready for presentation. The Supervisor helped Ivan to produce the final draft of his project, two pages of which are reproduced below:

IVAN'S FINAL PRESENTATION



INVESTIGATE CURRENT CONDITION

1) TEAM MEMBERS COMPLAINED OF METHOD OF STACKING.

- REQUIRED TO ROTATE BLANKS

2) TEAM MEMBER STOPS THE LINE DUE TO THE EFFORT IN REMOVING STACKING BOX FROM BLANKS

- REQUIRED SECOND TEAM MEMBER TO HELP.

3) TEAM MEMBER CONSTANTLY CALLING FORKLIFT TO REMOVE SINGLE PACK OF BLANKS

- THIS EQUALS 6 PACKS PER RUN

PROBLEM SOLVING

	PROBLEM	CAUSE	COUNTERMEASURE
No1	TEAM MEMBER TIRING ROTATING AND TURNING EVERY SECOND PANEL	DIE PRODUCES RIGHT HAND AND LEFT HAND PART TOGETHER STACKING BOX IS ONLY FOR RIGHT HAND PARTS ONLY	DESIGNED AND BUILT SECOND STACKING BOX FOR LEFT HAND PANEL
No2	TEAM MEMBERS STOP THE LINE TO REMOVE STACKING BOX	BLANKS WERE TIGHT IN STACKING BOX REQUIRED TWO TEAM MEMBERS TO REMOVE STACKING BOX FROM BLANKS	FITTED LIFTING LUGS FOR FORKLIFT REMOVAL OF STACKING BOX
No3	WAITING FOR FORKLIFT TO ATTEND LINE TO REMOVE BLANKS	TWO PANELS BEING PLACED IN ONE STACKING BOX FILLING IT VERY FAST. THIS REQUIRED THE FORKLIFT TO ATTEND THE LINE SIX TIMES PER RUN	SECOND STACKING BOX REDUSES FORKLIFT REQUIREMENTS TO THE LINE

The development of Ivan's project illustrates the ways in which the principles of participatory action research underlay the development of the Pilot Program in the Press Plant at Altona.

Ivan formulated, researched, acted and reflected upon a problem which was significant for him. His problem required that he mobilise and develop a whole range of skills and abilities, from his conceptual thinking about the problem through to the practical skills he applied to the making and modifying of his stacking boxes. Ivan's project involved many others in the plant in its execution. He worked with his fellow class members, with the workplace educators, his supervisers and managers, and so developed not only his own learning, but the learning of all these people within the organisation.

Ivan's project represented learning by doing. He developed not only his knowledge (and that of those around him) about the way raw materials are prepared in the plant, but he actively intervened in the system of raw materials preparation. Ivan acted upon the system to continuously improve it.

Assessment

The VIC knowledge learning outcomes were mapped to each unit of the Pilot Training Program as applicable and included in the assessment for that unit. They were documented, so that participants could measure themselves and their own progress towards attaining them, through each unit. The learning outcomes that could be achieved in each unit were listed in the assessment profile for the unit (see the following three pages). The Key Competencies (communications, group work, etc.) were to be assessed through observation of group activities, rather than by having participants answer a pencil and paper test.

Teachers kept detailed notes of group interactions during group activities and used these, together with participants own reflections upon group processes, to document the achievement of specified competencies.

Participants were expected to complete set classroom work requirements for each unit (these were specified in advance) and an assignment negotiated with the teachers. These work requirements and assignments were completed in small groups, and so participants were given the opportunity to take different roles within the group on different occasions. By monitoring group processes, as well as the actual work that was completed, both teachers and participants gained a clear idea of progress that was being made towards the achievement/development of the competencies.

The activity based nature of the classroom work meant that participants could demonstrate a range of competencies in one activity. This form of classroom organisation was designed to reflect the reality of work where competencies are developed concurrently, rather than discretely.

Unit 2. QUALITY CONTROL, DEFECTS and REWORKS.

V.I.C. Competency Assessment.

Employee Name: .... **Employee No. :** ....

Employee Level: .... **Pay Point:** ....

Demonstrated Competency	Yes	N.I.	Date.	Assessor.
VIC Module 4.6 B & C. The Member accurately demonstrated the use of selected quality control tools. - pareto diagrams - cause and effect diagrams - control charts - histograms				
VIC Module 6.3A The Member demonstrated a range of techniques in group discussion.				
The Member demonstrated the following techniques in group discussion: - used active listening skills - gave and received feedback - discussed ideas and suggestions - asked questions to elicit information - challenged assumptions - summarised discussions - gave information - acknowledged other members contribution - encouraged other members to contribute - provided leadership				

Demonstrated Competency	Yes	N.I.	Date.	Assessor.
VIC Module 6.4 The Member identified the steps in effective goal setting: - demonstrated the use of identified steps in the goal setting process.				
VIC Module 6.5 The Member demonstrated the basic tools and techniques used in group decision making including : - reaching consensus - working through the decision making process - participating in group decision making				
VIC Module 3.8 The Member demonstrated the ability to apply key points of effective listening in group discussions, such as : - hearing the message - interpreting the message - evaluating the message - responding to the message				
VIC Module 3.9. The Member completed to required standard, the following company forms : - Hold Ticket - Daily Production Sheet - Accident Report Form - Suggestion Form				

Completed Work Requirements.

Completed Work Requirements	Yes	N.I.	Date.	Assessor.
The Member completed classroom work requirements:				
The Member completed agreed work place investigation.				

sessment:

¼ **Yes** The employee is proficient in these competencies.

¼ **NI**

Comments (Assessor & Employee) :

....

....

....

....

....

....

....

Implementing the Pilot Program

The group for the Pilot Training Program comprised 10 individuals from the Press Plant. The group was self-selected (all eligible employees who volunteered were accepted into the pilot group), contained both day and afternoon shift employees, both male and female employees, and team members as well as team leaders.

The group met twice a week, on paid time, for two hours scheduled to coincide with shift change-over time. Hence some participants were coming to class after their shift and some were attending before going onto their shift. This regular group contact facilitated more effective learning by enabling continuity of class activities from one session to the next for the duration of the pilot project. This would not have been possible under the previous training arrangements.

In all, 38 hours of Team Member 2 training were developed. Twenty hours were delivered up until the shut-down at the end of 1993. The remaining 18 hours were delivered in 1994.

Small groups (up to 6 participants) were formed for specific tasks and the membership of groups was rotated. After the first 2-3 weeks, these groups became effective working groups. Participants in their groups were able to work through an investigation cycle of:

1. Negotiating a topic
2. Planning the investigation
3. Collecting data
4. Discussing and writing up results
5. Presenting to the class

As the learning progressed, the topics/questions developed by the groups became more complex and demanding. The small groups began to operate in quite sophisticated ways. In terms of the model of learning group development cited earlier[5], participants progressed from stage one to stage six within a matter of weeks.

12.6 Outcomes of the Project to Date

The Pilot Program at Toyota has demonstrated that VIC training can be conducted differently to the way it has been done in the past. The integrated program has provided a number of benefits for participants and introduced significant changes to the Toyota training system.

Progress to date has been limited because only one pilot group has gone through one level of training, but the small numbers involved should not be seen as a limitation of the project. Rather, this is just a small beginning for the development of changes at Toyota.

Management in the Press Plant have been supportive of the project and they are keen to see it continue through the whole of the VIC in the Press Plant. Management are also aware that the Press Plant Pilot is being watched keenly by other plants at Altona. Companies in the Toyota supplier network have also taken an interest in training developments at Toyota. The innovations developed in the Pilot Project, have thus begun to influence the way VIC training is approached outside of the Press Plant.

The Pilot Project in the Press Plant at Toyota Altona had a number of features which marked it out from the way training had been approached at Toyota in the past. These were:

Collaborative Processes

Mention has already been made of the extensive collaboration involved in the development and production of the Pilot Program. A broad cross-section of people (both vertically and horizontally within the organisation) were involved in the work of producing the Integrated Training. Team members, Team leaders and Group Leaders from the production lines, Engineers, Maintenance Personnel, Quality Auditors and Plant Managers, were all involved in providing assistance to the project. The Pilot Program was thus the result of the collaborative effort of many people.

Serge Beani, Production Manager of the Press Plant at Altona, commented on this collaborative process;

Oh, yes, that side of it has gone along excellently. I think that both Julie and Richard have really got a good cross section, of everyone within our plant, ... I think they've really got down to the grassroots level and actually got a lot of information from the actual people that are doing the job, but have supported that process by going and getting the relevant documents, any information they need from engineers, technical people, staff people. They've combined the both.

The Senior Shop Steward at the Press Plant felt that the involvement of shop floor people in the curriculum development processes was a key factor in the success of the Pilot Program.

We never had anything like this kind of thing in the past. This is the first time where actually the union or the people on the shop floor had some input into their teacher or their trainer. ... if we have input rather than somebody who doesn't know what's involved on the shop floor, the people will get a lot more out of it.

The perception that previous training did not always connect with the shop floor reality was highlighted by a comment from Nick Felton, a Group Leader in the Press Shop. Nick noted that managers who are based in offices off the shop floor, are not always in the best position to provide information on the training needs of shop floor employees. If curriculum developers restrict their consultations to managers they may miss important elements that only a shop floor perspective will identify. As Nick said:

... it's something that involves people on the shop floor, so it's better when you talk to them. [A little later he added]... *even gathering the information, gathering the data,* [for] *Training and Development, ... I never knew how those people in T and D collected their data, but I did see Richard and Julie come*

here and I liked it very much.

It is worth noting here also, that this process of consultation is made necessary by the shift from a more general approach to curriculum development to an approach based on the specifics of the particular workplace in question.

Formation of a Designated Group

One of the most important changes which occurred with the delivery of the pilot program was the formation of a designated group for the training. This was consistent with the recommendations of the LNA which had been conducted for Toyota at Altona.

Formation of the designated training group involved two key changes. First, the group was larger than normal for training sessions at Toyota. Secondly, once established, the same group was maintained for the full 38 hours of the program which was considerably longer than the few hours usually required to complete Toyota training modules.

Whilst concerned with the logistical difficulties of losing people off the line, Nick Felton noted that he had received positive feedback from class participants about the group structure.

> So they all said, it's better in a group. I can see the logic behind it. Even if we have people who are at the level of knowledge lower, being in a group is a lot easier.

Serge Beani also commented on the issue of group composition;

> *Well, it's not so much more difficult. Designated Groups have to come out of an area that they're in, I don't really see that as a problem in any way really.*

Integration of Classroom Activities and Shopfloor Practice

A second major difference between the pilot program and earlier VIC knowledge training was the emphasis placed upon linking the classroom training with shop floor practices. In some ways this shift represents a movement from general curriculum materials to context specific curriculum. Serge Beani commented on this issue;

> *I think that the real difference about this program ... is that it now relates to the jobs that people are actually doing on the shop floor. They can see the link about what's being taught up there, and how they can apply that back to their job, or how it fits in. ... So the obvious of having been taught something up* [in] *the classroom situation, that really relates to how they go about doing their job, that's very important.*

Serge's comments were echoed by Terry Collison who argued that whilst the intention had always been to make these connections, in practice it hadn't happened very effectively until the integrated model was tried.

> *This is completely different and it improves upon what we've been doing no end. Because although it*

[existing VIC training] *is supposed to reflect on-the-job tasks, it doesn't really. Whereas this really does... I think this is the best approach to training that we've tried, it works much better. The people are happy with it, they can relate to it much better. It's a considerable improvement on the way we've done it before. I think this is the way we'll go with all of it eventually. This program will help to push it in that direction.*

Competency Based Assessment

Participants in the Pilot Training Program were assessed on competencies demonstrated in group activities and investigations. They were given feedback after each unit of the program on which competencies they had demonstrated, and those they would need to develop further in the next unit. This form of practical and experiential assessment, was consistent with the company's move away from earlier practices where competencies were assessed by a pencil and paper test at the end of each short module.

Development of Cooperative Learning Groups

It was evident that groups which only ever meet for one or two hours simply did not have time to progress much past the early stages of development. Both teachers and participants thus found the extent of cooperative learning group development in the integrated training a stimulating experience.

During the first few weeks of the pilot program the teachers noted some reluctance to participate amongst the trainees. It seemed that this was a different style of training to that which many trainees had previously experienced. It was evident that some people did not know quite what to expect or how to react to teachers and other class members. Inappropriate behaviours included subtle "put downs" of class members if they seemed to repeat something that had already been said or did not know something which appeared to be obvious to others. However this behaviour disappeared as trainees learned to give more consideration to different approaches and developed the skills to discuss issues and listen to each other. It was also apparent in the early sessions that some class members were establishing themselves in certain roles. For instance some wanted to establish themselves as spokespersons or "leaders". However this was sometimes done at the expense of those who were not so confident. This behaviour also changed as the emphasis on working in groups required changing roles. This promoted conscious efforts to involve the whole class rather than a more vocal minority.

Yet another change was noted as the group came to understand that answers to the teacher's questions were not necessarily for the teacher, but to facilitate learning by the group. The trainees came to understand that the issue was not so much whether an answer was "Right" or "Wrong", but what could be learned from the response. They developed a greater willingness to explore issues together and developed an attitude conducive to collaborative peer learning. Within a relatively short space of time, participants in the Pilot Program were able to develop effective learning groups which supported peer learning through the sharing of skills and abilities, knowledge and experience.

12.7 Future Directions

At the November Steering Committee meeting Terry Collison reported on the further development of integrated approaches to training at Toyota's Parts Distribution Centre at Blackshaw's Road, Altona. Speaking of the initiative at the warehouse, he noted;

> *"Toyota is looking to make the integrated approach more common throughout the company. This will include: involving Group Leaders more closely in training; developing learning materials relevant to the shopfloor; and forming consistent groupings for training. There is a clear understanding that future training will take this integrated approach." (Minutes of Meeting 18.12.93)*

When interviewed about the pilot project Serge Beani echoed Terry's view and argued that future training developments should build upon the model provided by the pilot program.

> *If you're asking me whether we in the Press Shop would see this as a benefit to extend to all levels? The answer is yes. We think that's it's really a necessity. To fit the whole structure together I think that you must have ... some type of program that is actually fitting in with what we've done now at this level. In other words we must develop the same thing for the lower levels and the levels above. ... it is essential that we develop that situation.*

Serge Beani's comment was echoed in the interview with Ufuk Eren, the senior Shop Steward who argued for the extension of the pilot program:

> *Well, actually I'd like to see this done permanently in the whole plantwide, rather than just* [the pilot] *in the Press Shop. ... Yep, this sort of training, the way I see it, it's basically related to people's jobs rather than other issues that don't involve with their jobs or what they do in their day to day. So that's what I would like to see, permanently and plant wide.*

In reflecting on the developments with the integrated model Bob Pulford stressed how the project was consistent with recent shifts in the company's approach to training. The notion of outside "experts" coming in to solve problems is no longer tenable. He noted that the company had learnt from its own experiences and those of other companies and training providers. Looking to the future, he placed his faith in the skills of the people and their commitment to training and further development.

The emphasis in the Integrated Model on serving the customer as the ultimate arbiter of quality, was consistent with Toyota's corporate philosophy. The customers in this case were the Team Members of the Press Plant who were participating in the Pilot Program. The goal of the Pilot Project was to support these people in their knowledge and skill development.

The goal was not to develop a generic Team Member 2 Training Package. The curriculum materials that were developed as part of the Pilot Project were merely a means to an end, they were merely the vehicle which facilitated the development of Press Plant personnel. Following the logic of 'continuous improvement' these materials will have to be reworked, updated and improved, for each group that goes through the training program.

The continuous improvement of training thus means not just looking at new ways of conducting training, but it involves the continuous improvement of the training approaches and methodologies that are adopted.

The program has also demonstrated a model of training which

- promotes organisational learning and development;
- demonstrates the importance of participatory curriculum development processes and learning design;
- promotes learning that spreads beyond the classroom into the shopfloor;
- promotes complex and multi-dimensional skill development in program participants.

Whether there are any developments from the Pilot Program, and what form these may take, remains to be seen. However, the program has won support from the participants, supervisers and managers in the Press Plant and it has demonstrated a viable method of training.

Endnotes

1. Greenwood, D.J., Whyte, W.F. and Harkavy, I. (1993), "Participatory Action Researchas a Process and as a Goal" *Human Relations* Vol. 46, No. 2 p.177, Plenum Publishing, New York.

2. See also Cooney, R (1993) "Learning from Experiencein the IntegratedCurriculum" in *Critical Forum* Vol. 2, No.2 pp 52-58, ALBSAC, Sydney.

3. Greenwood et. al. p.177.

4. Johnson D.W. and Johnson F. (1991), *Joining Together: Group Theory and Group Skills*, Allyn and Bacon, Sydney pp 395-401

5. Ibid.

Chapter 13

Evaluation

The aim of the project was to develop, trial and evaluate a model of integrated training through six pilot programs in different enterprises across the industry. It was intended that this model would use a positive approach to meeting the literacy, English language and numeracy learning needs of a largely multi-cultural workforce by:

- harnessing the existing skills and potential of employees;
- utilising the linguistic and cultural diversity of the workforce as a positive advantage;
- employing an holistic approach to the development of workplace competence;
- facilitating learning which acts as a catalyst for workplace change;
- including all employees who wished to participate, regardless of levels of literacy and language;
- providing the mechanism for contextualising the VIC in each enterprise.

In evaluating the project, this chapter analyses the results against the aims of the project and examines the organisational, political and process issues, including:

- establishing and maintaining the six projects;
- developing and trialing the pilot programs.;
- the effects of the projects in the workplace with respect to the development of a learning culture, ownership, and involvement;
- integrated training and the industry reform agenda;
- processes of evaluation.

Chapter 14 looks specifically at the educational and curriculum issues that have emerged from the project. These include:

- Workplace language, literacy and numeracy
- Development of strategic competence
- Understanding the whole system
- Developing a learning culture
- Negotiated and contextualised curriculum
- Meeting VIC requirements and assessment criteria
- Syllabus review

The model of integrated training is evaluated in terms of its:

- ability to overcome barriers to training and to ensure effective participation;
- applicability to accredited training (VIC in this instance);
- applicability to different workplace contexts, work practices and cultures;
- capacity to address the major issues facing particular enterprises and the industry.

Chapter 15 draws some conclusions from the project, discusses the implications of the research and offers a range of recommendations.

13.1 Overview of Results

The pilot programs were concerned primarily with providing access to and successful participation in mainstream VIC classes for employees from a diverse background and ethnicity. This project provided a range of working examples of a model of integrated training which included employees in learning groups that were constituted to reflect the workforce (i.e. multi-lingual, mixed ability).

In order to bring the program as close as possible to the day-to-day experience of employees it was considered important to use existing skills, attributes and abilities to design workplace-based experiential learning and assessment. This approach had been expected to ensure the development of language, literacy and numeracy skills of employees while they completed their accredited VIC studies. As can be seen from the case studies, the effects of the programs were much more widespread.

As was noted in the methodology (Chapter 5), the success of this project hinged on the existence of a model of integrated training, an agreement on the conduct of the project in each enterprise, a supportive management structure and the employment of highly skilled teaching staff to implement the project.

The conceptual model of integrated training represented an ideal, and each of the six projects went some way towards meeting that ideal, although only four of the projects fulfilled the whole cycle of design, development and implementation of a pilot program within the time span of the project. While it could be said that it is problematic to draw conclusions from pilot programs of such short duration (36-60 hours), it can be seen from the case studies in chapters 7 to 12 that a number of common factors did emerge, despite the different contexts and totally different curriculum in each case. It is thus possible to make some generalisations and to envisualise a curriculum framework and a set of principles and processes that could be applicable to the contextualising of the VIC in all plants and workplaces across the industry, with possible application to other industries.

While it was believed by the teaching practitioners involved in this project that the approach adopted here would operate effectively, this was not proven before the event. Prior to the start of this project, it was evident that industry desired certain outcomes from training but understood neither how nor why this approach could achieve them.

Mainstreaming the issues of English language, literacy and numeracy by perceiving them as integral to the training context was an innovative approach that denied most existing practice. It also placed the projects in the midst of a political and industrial context which required different skills of project officers from those commonly thought to be needed by literacy and language teachers.

13.2 Processes of Establishing and Maintaining Projects

The innovative nature of the projects, and the recognition of the demands that this placed on project officers, dictated the need for structural support. As expected, issues of project management, the selection of project officers and industrial agreements were found to be critical to the success of the project.

Negotiating a Project

It took up to six months in some instances to reach an agreement for a plant or workplace to be the site of a project, severely restricting the time available to complete the project in some cases. In other cases the process was faster because of an existing industrial bargaining situation where the implementation of training was already on the table, so that this project merely provided a way in which to resolve the issues. Previous discussions may have taken a year or more to reach this point. In the case of HEC, the Senior Industrial and Training Officer was Chair of NALLCU's Management Committee and keen to become involved in the project. Both Ford and Toyota indicated from the start that they were also keen to host projects, although other pressures delayed their involvement at a very early stage. At Mitsubishi the decision was made fairly early to participate, however as the VIC was not being implemented at the time, it was a question of negotiating with all the players and affecting the whole of the implementation of the VIC, a process which continued right throughout the project in this company.

Having decided to conduct a project in a particular site, the process of reaching an agreement about what was to be achieved and by whom was critical to the success of the projects. Processes of appointing project officers and establishing their roles as well as those of the project steering committee and the relevant stakeholders, and agreeing who was to provide which resources, etc. all needed to be agreed and undertaken. The project briefs in each case clearly stated, not only the above, but also the methodology by which the goals were to be achieved. Mostly this proved to be a formality as people were fairly clear about the project after the initial discussions were over. Nevertheless the discussions and agreements that resulted in agreed project briefs were detailed and exhaustive. In the case of Mitsubishi the project brief was only ratified in December at the first meeting of the steering committee. In all cases a project brief was actually agreed and became the basis for developing and conducting the project on site.

Industrial Agreements

The need for enterprise based agreements that covered training was evident in each of the six projects. In those cases where an agreement was not reached prior to the start of the project, industrial problems emerged in the workplace during the project causing delays and, sometimes, lack of access to the workplace by project officers. In some cases the agreement that was reached was limited, requiring further agreement during the life of the project. At HEC there was an agreement that an industrial fence be drawn around the project to allow it to proceed. While not ideal, this did allow the project to operate quite smoothly, although issues for individuals emerged during and at the conclusion of the project. At Nissan an agreement regarding the pilot program was reached, but this took time and caused a late start to the project. Training agreements were reached at Ford, Toyota and Mercedes-Benz prior to the start of the projects. At Mitsubishi, however, industrial issues surrounding training frequently halted progress on the project, creating frustration and delays for the project officers who were sometimes unable to enter the plant for weeks at a time.

The existence of tripartite steering committees at each site assisted to overcome any industrial problems that arose from the projects, such as: times of training, payment, selection of participants, incremental wage rises based on training, issues of on-going training, selection of industry trainers, and so on. These problems were not resolved at steering committee meetings but were referred to the industrial parties for solution. Membership from the central union branch as well as the senior shop steward from the particular plant was critical to this process. Where an industrial agreement did not exist, the formation of a tripartite steering committee was also delayed.

As David Smith, AFMEU (Vehicle Division) Workplace Change Adviser, explained:

> *Well I'd say the first thing is before you enter any training programs like this, on a tripartite basis you need that Industrial Agreement. You need that framework for the thing to work, that's very important I think. If you don't get that in place, we're finding in a couple of places,where that hasn't happened; things just go haywire, people just start jumping in and saying 'What are you doing this for?' Whereas that Industrial Agreement lays out everything, and really the processes have been really smooth after that. Everyone knows where they stand, what's got to be achieved, you know, you motor right through it. That's the first thing.*

Project Steering Committees and Management

As is described in the case studies, the formation of steering committees at each site was critical for the smooth operation of the projects and mostly these committees played the role of identifying and solving problems, monitoring progress and supporting project officers. In a number of cases, project officers commented that the presence of other NALLCU personnel on these committees provided them with additional support. The composition of the committees was such that the decision makers were present and able to deal with minor issues as they arose. Industrial problems were dealt with outside these meetings with little delay and issues of resources and other outside matters were able to be removed from the direct responsibility of project officers.

In general project officers expressed relief that the formal and financial accountability rested with NALLCU's manager, and appreciation for the active involvement of the Curriculum Planning Officer and other curriculum officers. Some commented that the supportive management style allowed them to undertake their work with a degree of freedom and autonomy.

Project Officers

There was a high level of correspondence between the desired skills and attributes of staff (see Section 5.2) and those that were displayed by the project officers in their work, as is demonstrated by the results of the project at each enterprise described in the case studies. This would suggest that the selection of project officers was very successful. The case studies provide ample evidence of this through the high level of favourable comments from company personnel, program participants and the union. There was a general agreement that the quality of the programs was dependent on the skill and integrity of these teachers.

13.3 The Process of Developing and Trialing the Pilot Programs

The process of program design and the development of learning strategies and materials occurred collaboratively at shop floor level in each case. The developments at each site reflected the cultures and contexts, policies and practices of the enterprises and plants concerned. Therefore, the extent to which each of these projects developed the model of integrated training was dependent on a number of factors beyond the control of the project officers.

The anticipated complete sequence of activity (design, development, trial and evaluation) was completed at only four of the six sites; HEC, Nissan, Ford, and Toyota. However, at Mercedes-Benz the training system, based primarily upon individual use of workbooks on the line during slack or down time, did not involve the provision of training classes. In this sense it was not possible to conduct a pilot program, with a discrete group of trainees, as was the case in the other enterprises. The project resulted in developing a series of self-paced workbooks, the first of which were trialed with small numbers of employees prior to the conclusion of the project. Responses to the workbooks were positive and the company has continued the development and trialing processes.

At Mitsubishi the pilot project was initiated prior to the company's implementation of the VIC and the project in this company helped to shape that implementation. A collaborative process was used to develop a portion of the curriculum for a pilot program. It is anticipated the program will be conducted during 1994.

Selection of Participants

The selection of participants was different in each case, with project officers sometimes having little say in the composition of classes.

- At HEC all those foundry employees who had completed the core knowledge units of the VIC were included in one of the two groups timed to meet the demands of shift work. The two groups were short on numbers and in order to make classes up to a viable size the elective was opened up to new VIC applicants. All interested employees able to attend classes at the nominated times were given access to places. Other employees attended core classes and specific elective sessions where possible.

- At Ford the trainees who were given first preference for the elective unit were those who needed the 60 hour elective to complete their VIC. The selection was not in the hands of the project officers.

- At Nissan the selection of participants was also targeted to those who had reached a pay level such that they needed VIC knowledge units to progress.

- At Toyota only those eligible for the particular level of the VIC were eligible to apply, and all those that did apply were accepted into the class.

It was expected that the workbooks at Mercedes-Benz would be available to all employees, however the trials of workbooks that were conducted included a sample in each case of two individuals, one person who knew the particular work area and one who did not.

At Mitsubishi a learning needs assessment of the whole plant was conducted with the intention of offering the integrated model only to those who were judged in need of assistance with their literacy, numeracy and English language skills (when the program was offered in 1994).

Each company policy was different and the way in which participants were selected mirrored these differences. Often this process was the sole precinct of the industrial parties, and project officers worked with the group that was formed. The integrated model was conceived as applicable to mixed ability groups.

13.4 The Effects of Projects in the Workplace

One of the key features of all of the pilot projects was the extent to which the collaborative processes of program development and implementation involved a range of people in the enterprise. The extent of this involvement is summarised in Table 14.

It can be seen that the impact of the projects extended much further than the provision of training for a relatively small number of trainees. The effect went beyond the narrowly defined "target" area of non-trades employees. Of the 309 people who have been identified in Table 14 as becoming involved in the development and implementation of the programs, only 25% were actual participants in the pilot programs.

The high level of involvement of supervisors, technical staff and managers in all aspects of the project at enterprise level helped to provide support for employees in their learning and in particular, with the practical projects that were a feature of four of the six programs conducted. Their involvement in the design of these activities and other aspects of curriculum, ensured that the programs addressed real workplace content, problems and issues. More importantly, there is ample evidence to suggest that it reassured them of the value of the training towards meeting goals they considered important at plant level.

Table 14 People Who Contributed to Curriculum Development

Company	Employees Participating in Pilot Program(s)	Shop-Floor Employees	Supervisors/ Technical Staff/ Managers	Others	TOTALS
HEC Foundry	31	12	36	22	101
Ford NPDC	11	39	25	10	85
Mercedes-Benz	*	6	8		14
Mitsubishi Hardware	*	#	#	#	#
Nissan NPDC	25	13	11	18	67
Toyota Press Shop	11	10	16	5	42
TOTALS	78	80	96	55	309

* No pilot program conducted # Figures not available

In each case the project officers worked strategically to involve supervisors, managers and technical personnel as well as the shop floor employees. "Others" included union officials from the state offices, TAFE college staff, other NALLCU staff and, in some cases, people representing the customers of the particular business; such as personnel from the dealerships supplied by the warehouses.

This strategy of involving a wide range of people was entirely consistent with the philosophy of the integrated model. Namely, that "the problem" was not seen in terms of individual employees with limited language, literacy or numeracy skills, but rather as a systemic issue which required developments at a range of levels. The project officers recognised there were multiple stakeholders with legitimate needs and interests to be addressed.

Stimulating Interest and Enthusiasm

The projects not only involved a wide network of people, they stimulated those who became involved. Without exception the lasting impression from each of the projects, was one of interest and enthusiasm. This enthusiasm was remarkable for its generality. It was apparent that in each case the projects had worked across traditional lines of demarcation within the workplaces, both vertically and horizontally. And in each case they had generated interest and support for the initiatives being proposed.

If, in each case, the support had been expressed only from one particular quarter (such as company management) we might conclude the model had failed to address the needs of all stakeholders. On the other hand, if support was expressed from different quarters in different sites we might note that the model produced inconsistent results. However the effect has been virtually universal. In each case, across the range of stakeholders, from the shop floor through to management, those involved with the projects have communicated their interest and enthusiasm for the approach adopted.

In several cases stakeholders have indicated their intention to adopt the principles of the integrated model. Nissan is proceeding with the development and provision of its integrated VIC program, with on-going involvement of the project officer under the auspices of Moorabbin College of TAFE funded by the Office of Training and Further Education (OTFE). The union has adopted the principles of the integrated model for shop steward training and has hired a former NALLCU project officer to assist in this effort. HEC has asked NALLCU to be involved in continuing initiatives in other plants, based on the integrated model developed at the foundry. Other companies have expressed their desire to apply the integrated model in other areas of the VIC and in other training arenas. The model is also being applied to some of the smaller automotive component manufacturers and is demonstrating its applicability to this environment.

It is clear that although the effect of the integrated model in the workplace varies from one site to another because of factors relating to that site, its effect is not restricted to one particular sector of the workplace. As an holistic model it has the potential to affect the entire workplace. The experience of this project suggests that this can be a positive influence for all stakeholders.

Claiming Ownership of the Program

As a member of five of the six project steering committees, David Smith from the AFMEU (Vehicle Division) was in a good position to comment on aspects common to a number of programs. In an interview with Peter Waterhouse, he commented:

> *... it's an important part of the process because it gives those people out on the shop floor the ownership of it basically, ... Instead of management bringing something down and saying this is what your training is, the people on the shop floor are actually involved in developing it. They're all experts out there on the shop floor and you just tap into that expertise.*

This comment from David Smith reflects the way the stakeholders claimed and expressed their ownership of the training programs developed through the collaborative approach. This was a universal effect across the sites. Although the program content varied from site to site, and in some cases the pilot program was not implemented as anticipated, the expressions of ownership were apparent in every case.

David Smith argued for a strong parallel between the educational processes of the integrated model and the industrial processes for workplace change. In both cases shop floor ownership of the change process is essential. Without such ownership there is a lack of commitment to and acceptance of the changes which then become impossible to sustain. As he noted,

> *Work change, ... starts right at the bottom. Unless you can get the people from the shopfloor involved - where the people say, "Well now I know what happens before it gets to me, after it gets to me - I can actually recognise a fault. I can go and rectify it." or whatever, to me that's really the beginnings of work change, the real guts of work change ...*

He argued that this kind of involvement and ownership is best facilitated through an appreciation of and respect for people and their work.

> *... when you start letting people know, or giving them an idea of what they do in the workplace, how important it is, give them some pride in their work if you like, a sense of achievement in what they do and let 'em know how important they are in the whole process; then they can start to accept work change and understand why.*

This comment echoes the curriculum development processes adopted in the pilot programs. The evidence of these projects suggests that such processes are successful in generating and sustaining a sense of ownership and commitment amongst all the stakeholders. The following snapshot from the field also illustrates this point.

The scene is a tripartite steering committee meeting, there are about a dozen people sitting around a polished timber table, company representatives, union representatives and staff from NALLCU. Project officers are expressing appreciation for the support and cooperation they have had from the company management and shopfloor personnel. *"The trainers, and everyone, they've been fantastic, they really have. People keep coming back to us with more information for the curriculum."*

The senior shop steward, who is a member of the committee speaks up. *"It's because you talk with them. In other words you talk the language of the people. It's true, you do. They feel it's honest, they feel that it's going to be theirs. Before, when anybody tried to teach them something, they feel there's another agenda there. They think there's another line there. But with you they feel it's theirs. They really believe that. That's the feedback I'm getting."*

In this same meeting the company management expressed their satisfaction with the way the proposed curriculum was responding to the prescription they originally offered. There was bipartisan support for the approach being adopted, this was the case in each project. The collaborative process was demanding but it showed that it is possible to develop programs which can be jointly owned by the enterprise management and the shopfloor personnel. When all parties want to "claim" ownership and feel a sense of identification with the curriculum the opportunities for learning are enhanced greatly.

It can be reported that in each of the pilot programs the stakeholders did express pride in their program and their achievements. It appears that one of the effects of the development processes used is a high level of commitment and ownership on the part of the stakeholders.

Learning Culture and Change

The key issues of learning and change are taken up further in the following chapter. However it is worth noting here that the collaborative development process was a key factor in supporting the establishment and growth of learning cultures within the workplaces. The development of workplace learning cultures was targeted, not just as an outcome of the VIC training to be delivered to trainees in the pilot programs, but as a desired outcome of the entire project.

As was anticipated, at each site the implementation of the integrated model involved a wide range of activities that provided opportunities for teaching/learning exchanges between project officers and company personnel at all levels. All of these contacts assisted in promoting the development of a workplace learning culture. The case studies demonstrated that these opportunities were not restricted to the formal training sessions during the delivery of the pilot program, but included: consulting processes, collaborative writing and re-writing of curriculum, on-site research, the problem setting and problem solving activities associated with curriculum development, and so on. The following quotation from a project officer illustrates how collaborative processes undertaken led to changes in company practices that might at first glance seem unrelated to concerns about language and literacy.

> *... We were doing the routing tags, everything that comes into the place gets a routing tag and on each tag, there's all these different sections, with different information. ... And I was talking to this guy, he was packing all these things and I said, 'How do you know that these things are packed correctly?' And he said, 'Well you just know' and I said, 'But how do you know?' and he showed me the tag. But the tag was in codes and it didn't seem to relate to anything and if something came in and it was packed differently he had to take it to inspection and get them to check it out. So I said, 'Wouldn't it be better if you had the codes and you wouldn't have to go through the whole process of taking it to inspection and having them chase it up?' And he said, 'Oh yeah, but I don't know where you get them.' So I said who might know?' ... 'Oh, try the trainer.' So I went to the trainer and he said, 'Try the stock control office.' So I went to them and they didn't know and they had been complaining for years about it and been told they can't have it. They sent me to the packaging engineer. The packing engineer's just new and he didn't know anything about them, so he had to go and find the man who used to have the job. He went through this very old file and found them! They dated back to June 1980. He explained what they meant, the numbers and the letters, relating to the size of the package and the meaning of it all. And it all made sense and he was amazed* [that they didn't know]. *And now he's updating them all because they don't use all of those codes anymore.*
>
> *When I went back to the Trainer in charge of shipping and receiving, after chasing all this around, I went back and I said, look, I've got those codes. And he said, 'Can I have a copy of that?' and he's going to use them in his training now.*

In this case the question from the project officer was, *"But how do you know?"*. The enquiry was on the shopfloor, but like a stone thrown into a still pond the educational ripples spread considerably further. The creation of such educational ripples was a strategic intention of the project methodology. The effect of this strategy varied from one project to the next, as can be seen in the case studies and in Chapter 14. Nevertheless some "ripple effect" was apparent in every case. To this extent the methodology of the model of integrated training, quite apart from the program content and training delivery, can be seen to be supporting the development of workplace learning cultures.

Integrated Training and the Workplace Reform Agenda

In each of the case studies there is evidence of the ways in which project officers had to adjust to and accommodate the particular work organisation, practices and the culture of the enterprise in which they were working. Where changes were being implemented, the focus of those changes was taken into account and learning materials constantly up-dated to reflect the current reality of the workplace.

It was anticipated that project officers would find themselves working in an environment where their activities in designing, developing and implementing curriculum would impinge directly on the workplace, and contribute to changes on the shop floor. This certainly occurred and the case studies contain a number of examples that illustrate this process of change. Not all change is comfortable, however, and there is also evidence of some of the frustrations and delays experienced by project officers and the constant adjustments that they had to make during the development of the project to accommodate changes occurring around them in the workplace.

One of the more encouraging features of the case studies is the constantly recurring theme of change, with program participants and other interested people in the workplace not just expecting project officers to keep up with changes as they occurred, but bringing them to their attention constantly, with the expectation that the curriculum could be adjusted and brought up to date at a moment's notice. Thus, although the programs have finished, the curriculum will not ever be complete, as constant changes are incorporated in an on-going manner that will ensure the continued relevance as well as the continuous improvement of the curriculum. It was obvious from the case studies that participants took some pride in this process and were alert for information to bring to class.

It is this process of continual change that brought the training that was conducted in this project so close to the workplace reform agenda, and that ensured its relevance in the workplace and to the participants.

13.5 Evaluating the Pilot Programs

In some cases participants were asked to evaluate each class session. This was notably true at Nissan NPDC. These on-going assessments were used to adjust the program and to respond to needs as they arose. In each of the four programs conducted, both participants and other stakeholders in the workplace were constantly involved in the program adjustments that occurred over time. In some cases these occurred because of changes in the workplace and in other cases they arose out of problems or suggestions raised in class. The flexibility of the programs allowed for a quick response when such issues did arise.

The summative assessment of each of the pilot programs was conducted by Peter Waterhouse as part of the documentation and review of the project as a whole. Evidence gathered by him clearly indicated the degree of ownership of the program which people from within the workplace claimed and the high regard they held of their training program. As can be seen from the case studies there was very little, if any, negative response to the programs that were conducted.

13.6 Conclusion

The project aimed to provide six exemplars of a model of integrated training that would be flexible enough to incorporate different contexts and enterprise-specific content and provide the learning outcomes of the VIC so that participants could receive their accredited certificate. It was clearly demonstrated that the model of training that had been developed was applicable to a wide range of contexts. It was also able to address the major concerns of individual enterprises and the wider agenda of workplace reform and to demonstrate that training could affect workplace change. High levels of local ownership of the programs and of involvement of people across the plant in all aspects of its design, development and implementation meant that the training played a significant role in the development of a learning culture within the workplace in each case. Thus the project was successful in meeting its aim, although the degree to which each pilot program completed the task in the limited time available differed from case to case.

It is evident that the success of the project relied heavily on the way in which the pilot programs were established and managed. The tripartite steering committees that were formed had an essential role to play in ensuring the success and acceptance of the programs in the workplace. However, this was essentially a curriculum project and its most important aspects relate to the educational and curriculum issues that arose. These are discussed fully in chapter 14.

Chapter 14
Responding to Learning and Curriculum Issues

The integrated model was developed to address the particular issue of access and equity for an estimated 40% of non-trade employees in the vehicle manufacturing sector, anticipated to have English language, literacy, or numeracy difficulties in accredited VIC training.

The overall concept of the VIC reflects a progressive perception of training and provides considerable scope for the development of an excellent training model. Detailed analysis of the VIC syllabus knowledge units suggests however, that there is a need for revision and re-focus of a number of the learning outcomes and performance criteria. Experience in the industry, prior to this project, identified a number of common and often interrelated design or implementation factors which exacerbate the impact of language and literacy difficulties and create barriers to successful participation in training. These include:

- separation of theoretical knowledge from workplace practice[1];
- discrepancies between the language and literacy of training materials/assessment tasks and the authentic language of the workplace.
- passive and rote learning of pre-packaged material and a lack of support and encouragement in active learning;
- fragmentation of curriculum and lack of emphasis on process of learning;
- unnecessary complexity and abstraction of core knowledge concepts and over simplification of complex workplace processes;
- inappropriate or irrelevant curriculum and/or learning materials;
- discriminatory and inappropriate assessment;

The integrated model described in the case studies was intended to respond to these various issues. The following comments, references, comparisons and observations are based on the pilot programs at HEC, Ford, Toyota and Nissan, as these four programs were completed and fully trialed with pilot groups.

14.1 Workplace Language, Literacy and Numeracy

Diversity of Ethnic/Linguistic Background

Each pilot group reflected the cultural and linguistic diversity of their particular workplace and the mixed ability basis on which work groups/teams are organised. The learners were at different levels of English language and literacy development and of varying educational and background experience. The project officers had already met and established relationships with quite a number of the participants during the earlier stage of researching needs and the curriculum framework.

Table 15 illustrates the diversity of ethnic/linguistic backgrounds within each project and the dominance of non-English speaking backgrounds in three of the projects.

Table 15 Diversity of Ethnic/Linguistic Background in Pilot Groups

Nissan	Holden's Engine Company	Toyota	Ford
Seychelles Croatian Malaysian Greek Maori Mauritian Spanish Italian Australian/English	Hungarian Egyptian Greek Vietnamese Chinese Timorese Turkish Spanish Italian Croatian Macedonian Maltese Pakistani Australian	Maltese Italian Croatian Maori Vietnamese Australian/English	Sri Lankan Italian Croatian Australian
8 NESB 17 ESB	23 NESB 8 ESB	6 NESB 4 ESB	8 NESB 3 ESB

Notes: (i) A number of employees had varying degrees of proficiency in three or more languages.
(ii) In the case of the HEC project, a further eleven employees of Chinese, Timorese, Vietnamese and Turkish backgrounds joined in some of the pilot program activities.
(iii) Nissan and HEC each had two groups to cover different shifts.

Participants were not streamed or categorised[2] according to assessments or tests of standard English, however during preliminary interviews and/or in initial classes in each pilot group the project officers looked closely at the way in which individuals used language, and their general communicative and mathematical competence. Particular attention was paid to three main areas:

- their background/life experience, education, skills, range of general abilities and specific talents;
- their current work circumstances, opportunities to model and use English language and literacy and whether they were in any way marginalised or disadvantaged by those circumstances; and
- the strategic competence[3] with which they coped in the workplace and in training.

This information was used in each pilot program to shape and adapt learning experiences and resource materials to meet the ongoing needs of both individuals and the group. Although the conceptual framework of each program had been outlined in some detail, during initial collaboration, the major development and refinement of learning experiences occurred during this implementation phase. Project officers drew extensively on input from the participants and other key personnel - managers, supervisors, shop stewards, leading hands/group leaders, a number of whom were of non-English speaking background and demonstrated empathy towards participants.

Language and Literacy in the Workplace

Workplace languages/literacies do not conform precisely to the norms of standard English[4]. However they are none the less valid and provide the linguistic and social context in which employees must participate with confidence and competence. The process of developing the curriculum at each enterprise revealed that the dominant language, as used by supervisors, plant managers and technical staff is highly specific, technical and systematised, as well as being rich in semantic complexity, varied in genre, and idiosyncratic in its conventions. It incorporates the plant lingua franca.

For example, in the foundry, (p. 71-75) oral communication between shop floor employees, supervisors, and leading hands relies substantially on a network of ethnic languages and a continually evolving plant specific lingua franca. The latter is a hybrid language which is a pragmatic combination of English, technical terms, vocabulary specific to plant systems, colloquialisms and Australian slang enriched with gestures and signs. The utterances are often short and very direct - essential elements in a very noisy environment where time is precious. The situation was not dissimilar in the Press Shop at Toyota where a comparable, although different, lingua franca, is used.

In each of the plants written requirements were generally minimal, however the communicative complexity and genres of written information varied considerably from plant to plant and work area. So too, did access to written information. At HEC for instance, operators knew the procedures, but often did not have ready access to procedure sheets for the purpose of reading. The situation was different at Toyota where a great deal of written communication was highly visible - positioned on/or next to machines or on display boards throughout the plant. Although this material was available, not all operators could or chose to access it. At Nissan and Ford warehouses, employees had access to quite different written information - computer screens, procedural charts, icons, numerical and bar coding, etc. pertaining to their area. They had to focus on, comprehend and use the information specific to their area all the time.

The project officers found that the trainees use of workplace language frequently reflected the lingua franca of particular parts of the plant where they worked, for example picking, (warehouse) or fettling (foundry), rarely the whole plant, or in the case of the Foundry four plants. Some of the trainees had acquired very little of this language even in their own area, although they had acquired detailed translations and approximations in their first language from work mates and others.

The project officers found that particular factors which influence the acquisition of workplace language in each context were related to two broad areas of the environment:

- In terms of the physical environment, noise levels, sometimes exceeding 100dB, the physical distance between operators, and the incidence of hearing impairment made it very difficult for some employees, especially these from a non-English speaking background to model and use new language concepts and speech patterns. In each project it was extremely important to use a classroom adjacent to the plant to provide a quieter environment for discussion, interaction, sharing and modelling of language.

- The social environment further influenced language acquisition. Where a leading hand, group leader or more experienced operator translated pragmatically into a common first language, the hierarchy of that relationship was reinforced, even though expediency rather than power was the usual reason for the translation. Some operators of English speaking background also had difficulty understanding non English speaking background leading hands/supervisors.

  A further element of the social environment was that the plant hierarchy, in several instances, passed on only limited information. This seemed to relate to conventional practice, rather than to any policy of exclusion, and to the fact that the pressure of production/distribution was always intense and communication of information and therefore language, was often pragmatic and expedient. The use of standardised procedures which indicate how work is to be done, have not always included "why" and "what if" at an operator level. A frequent comment by participants during interviews was that prior to undertaking the training in these projects, they only knew "how" not "why" - hence their knowledge of language of the workplace had been restricted.

Project Officers Accessing Workplace Discourses[5]

The project findings demonstrated that, for employees, adapting to changing roles and responsibilities and pursuing new career opportunities involved more than simply accessing the dominant language. This shift also involved them in participating in the dominant discourse of the workplace at a different level. They had to be able to act and use language in new and particular ways, for thinking, feeling, believing, valuing, etc.

For the project officers, access to different levels of discourse was also through an active process of enculturation, not simply learning about it or observing from a distance. Thus accessing the full potential of the language, exploring its nuances and actively using it, through natural acquisition and deliberate critique involved considerable learning through participation at all levels in the workplace culture. As one participant at HEC reflected:

> *It's been funny because they* [the teachers] *have been learning as well as we have.* [They have learned a lot] *by listening to us* [employees]. *They've taken knowledge off us and taken it back and put it in the course.* [p.128]

At Ford, Toni Roberts also commented on the way the project officers were learning on the job:

We had to learn about the computer system, paperwork and terminology used in the warehouse. One example of confusing use of terminology was that the term "fast-moving stock" had a different meaning in different areas of NPDC. ... Warehouse personnel seemed unaware of this, because they knew what they meant, but for new people such as us coming in, it was very confusing until we identified the two meanings. [p. 134-5]

This learning about the discourse extended into the design of the learning program:

As teachers, we had skills in designing classroom activities, but we had insufficient knowledge of the problems faced in the warehouse to design effective activities. We therefore held curriculum workshops, using shopfloor personnel, trainers and management personnel to brainstorm ideas for activities and research projects. The results of these workshops formed an essential part of the elective module. [p.135]

Detailed knowledge of what goes on is sometimes compartmentalised as part of the discourse, especially in large organisations as confirmed by Brian Whitcher, Operations Manager at Ford NPDC.

The strange thing that I found about this is, that I had to start thinking about what we did, to be able to tell Phillipa and Toni, and I sat down ... and I thought; "What am I going to tell these people?" You know? What does happen in Binning? And I really had to start thinking about what we wanted them to come up with. So it's a bit of a challenge. [p.158].

Serge Beani, Production Manager of the Press Shop at Toyota, confirmed that the project officer's efforts to access a discourse using a cross section of everyone in the plant had been excellent:

... I think they've really got down to the grassroots level and actually got a lot of information from the actual people that are doing the job, but have supported that process by going and getting the relevant documents, any information they need from engineers, technical people, staff people. They've combined the both [p. 270].

Terry Klass, despite his knowledge of foundries and foundry processes as a teacher, indicated that it was quite a different matter to access the language and discourse of a particular foundry.

I think it's such a large complex process, you know. The management people there have been working in that area for years and years ... and it's taken them that long to know the whole thing fairly intimately and that's what we had to do in a short space of time. Very quickly we had to become intimately familiar [have an] *intimate understanding of every process that went on throughout that particular foundry. And there's a heck of a lot of people there and a heck of a lot of things going on. And we weren't allowed to get any of it wrong* [p.126].

These comments raise the interesting question of the connection between dominant discourse, key competencies and transferability - that is, each workplace is different and one always has to access the particular context. The ability, skill and insight needed to systematically analyse and develop a conceptual framework, in a known context, underpins the competency to transfer learning strategies to a new situation.

Applying those skills in a new context also depends on accessing the dominant discourse through a process of enculturation in the new context. As the project officers discovered, this takes time and involves developing networks and enduring partnerships.

Learners Accessing the Dominant Language and Discourse

The prime focus was on learners accessing the dominant language and discourse and participating in dynamic learning experiences that enabled them to move beyond the confines of their immediate jobs[6].

The task for the project officers was to design the learning experiences so that language development was an integral component[7], not a parallel or separate entity. It was not a matter of putting in the language as if it comes from somewhere external. By focusing on real processes, procedures and activities, language is automatically an integral component. For example, when dealing with scheduling as it occurred in the workplace, the language had to be specific to the particular system - PANDA (Ford), Kanban (Toyota), NAPS (Nissan), MRP2 (HEC). Language was acquired naturally and more effectively through use. For example, the relevance of the following language concepts is in their specificity and application in context:

- the semantic elements of language in the warehouse - *"turret queues"; "chain of customers"; "bill of material";* in the foundry *"slagging off"; "adding molly"; "doing simo"; "dead clay";*

- the syntactic structure of press shop language - *"member, floor, inner, right hand"* which in standard English would read - *"right hand, floor side, inner member"*.

- Figure 10 (p. 212) illustrates the systemic overview implied in the language concept - *"chain of customers"*.

The Nissan case study highlights strategies devised not only to access the dominant discourse of the warehouse but also to link that with language and discourse of the dealership. This involved constructing an holistic perspective of the Nissan warehouse linked with the dealership (inter-operational, intra-operational). The overview of details of these innovative learning activities, centred on the dealership and reciprocal visits, is set out in the Nissan case study (p.210-216). These activities brought the project officer, trainees and managers together to plan and participate in the visits. The questionnaire [page 213] highlights the language which trainees needed to develop and to come terms with, and the emerging notions of the warehouse as a system interacting with systems outside the plant. Trainees were beginning to use language as a currency for legitimate exchange of information in new contexts. The summary of concepts which underpinned this series of activities, is quite impressive.

- **Dealership franchise;**
- **Internal organisation of dealerships;**
- **Role of dealership in relation to NPDC;**

- NPDC departments which support dealership network;
- Policies relating to dealerships (rebates, target and stock order buy backs, credit returns, ordering systems - routine, urgent, fast track);
- Technology: Niscom interfaced with NAPS (ordering, national parts locator);
- Quality issues (correct delivery, JIT etc);
- Inventory control (manual nils per location etc). [p.212]

It demonstrates the language concepts and level of abstraction which trainees could deal with and the importance of the support and guidance they received. For example, the analysis, categorisation and synthesis involved in constructing the flow charts was a new experience for everyone.

...'alf of us didn't know what flow charts was ... and through the classes we're learnin' one different aspect of the job to another ... Yes, how it all fits together. [p. 230-231]

This expanding consciousness, moving beyond the walls of the warehouse, out into the office and administration areas and beyond to the dealership was a valuable learning experience. As Roger Beruldsen, Manager of Dealer Development explained:

... well we get a lot of Dealer complaints that the warehouse people don't understand what happens when they get the part, and it also suggests the Dealership people don't understand the size of our operation here ... I think in the past we've been quite isolated, working in a little box without really understanding all the implications.[p. 233]

The dealership visits had a purpose:

We've indicated to them that there will be specific things that we will be doing, and things to ask at the dealerships, and that the dealerships will have to play a specific role. So it's not just a courtesy visit. There's precise things that we want to get out of it.[p. 234]

Following the visit Roger indicated,

I'm sure it's going to build a stronger relationship where we've got that involvement. From the warehouse point of view, I think ... the people in the warehouse will understand there's another link beyond putting the parts on the truck, which is very important. It's saying that the level of service that we're offering is improving, and also for the warehouse personnel, it'll give them a greater feeling of what we're doing. [p. 234]

From one participant's view point, the wider interaction was perceived as:

... it makes it a bit more interesting, like going to Bosch and everything like that, and having Tim Duncan [Materials Manager] *visit the class. Even though you know the guy, you don't really. It's funny how you don't really know what the guy does, what he's involved with. It's interesting to find that out* [p.235].

One participant connected this learning to relationships in the dominant discourse.

The other thing I think, with any learning thing, you just get that little bit more confidence each time. Like a little bit more self esteem to be able to say what you think, about your job, or people. I don't know, it just makes you think differently. It probably would help me if I went to another place. I mean

> *even outside, socially, with clubs or things* [p.231].

The learning process would not have been possible had the project officer not worked at linking the interests and needs of employees with that of the workplace.

> *She come out and spoke to me about different things. She went around to everybody of course and spoke to different people. ... I reckon it's a good idea because this is where we work. So I suppose we should be learning all about our jobs and everything like that. I reckon it's better the way you've done it* [p. 229].

This was confirmed by David Lloyd:

> *I think that's been very good. I think the way Ann has canvassed the warehouse staff, and from what I've seen she's made it very relevant to this particular warehouse, their terminology, their general speak; and that's reflected in the people responding. ... from my perspective there haven't been any problems.*[p.229]

The process of involving employees impressed the Warehouse Manager, Paul Willigenburg.

> *... this whole thing just opened my eyes, that really people had been sitting there for ten years waiting for this to happen. And it took, not just this process, but almost a bloody recession - or the change in the company - for us to finally wake up to the fact that we had all this. All this input sitting there dormant* [p. 229-230].

He also emphasised that accessing the dominant discourse is not a simplistic exercise. It requires collaboration and integrity.

> *... when we started, initially I thought I could flood* [Ann] *with all the things I wanted, but very very quickly I found it wasn't so. I realised very very quickly that what you* [NALLCU] *really wanted to do was ... based on the framework of the VIC ... to develop what we* [as management] *wanted but also what the employees wanted. I was very happy about the way that was put together* [p. 228].

A second example, from the foundry at HEC looks at the way plant staff supported trainees in learning specific experiences which required accessing the dominant culture. These learning experiences were designed to engage learners with significant personnel in the plant, such as leading hands, supervisors, engineers and managers.

For example,

- * *monitoring qualities in core production;*
- * *monitoring variables in the sand mix; and*
- * *documenting the procedure for fettling cam shafts.* [p.95]

When interviewed about the project, project officer, Jane Sims described her position as being somewhere "in the middle, between management and the shop floor employees". Jane saw her job as one of facilitating more effective communication and developing relationships more conducive to effective workplace learning. She went on to comment on the individual projects undertaken by trainees.

Each project was designed for individual participants and negotiated with them, their supervisors and Nick Papadam [Foundry Superintendent] *prior to starting, ... Nick provided them with a fairly formal "gatepass", into whatever they needed to do. He ... discussed the project with them, ... signed them off, and said, "If there is any problem at all, please come and see me."* ...[The students] *were thrilled, ...* [it] *gave them a wonderful lift, they just took off* [p.96].

The example of one project illustrated on page 102, indicates a remarkable level of access to the dominant discourse. Twelve HEC staff were willing to help three of the day/afternoon shift trainees with their research project. *Try-out of modification to Drag Pattern in F11Cylinder Blocks.* These three trainees spoke Vietnamese, Greek and Croatian respectively as their first language, and only one used written English exclusively for writing research notes. Despite spanning two shifts and working in separate areas of the plant, they worked collaboratively with each other and sought the support of the staff assigned to them, as well as from other employees in the plant and fellow trainees in the classroom.

The project became a partnership in learning. As Bryan Bardwell, senior engineer, commented:

We afforded them as much time as our job permits. Ian, for example, who actually works here with me, was working with two [of the participants in the program]. *He spent quite a lot of time with them, quite a few hours I think, over a few days, you know.* [p. 126]

The responses from trainees indicate how this learning process extended their understanding into a meaningful framework:

This process has been very good for us. ... My project was Try-outs. I have done this Try-Out as a production worker, but I didn't know how things happen. Now I understand why the changes come in and how does it happen and what is the result. [p. 119]

Oh no, it's the whole process ... at least we know now what's in there, so it gives us a better idea if we want to query something. [p. 119]

And we've learned about other sections, like where we weren't working. Like a lot of us move around, but like the melt area, we haven't worked ... [but] *we've learnt right through the melt area, the tests, the spectro analysis tests, all the you know, the control room and all that. We wouldn't have got near that without the course.* [p. 119]

Other comments highlight that access to the discourse is also about relationships and perceptions.

... even like the people ... Like Nick, [the Foundry Superintendent] *... you'd see him walk past before and you'd say "Who's he?" you know? Now you know kinda what he does and what his purpose here is, you can approach him!* [p. 122]

This course with communication, now I'm speaking more with the foreman than before. I'll just ask 'em anything these days, it could be on anything. He'll sit me down and tell me all about it. [p. 122]

Far from being a limiting experience, it is extremely important that employees at all levels of language proficiency have a chance to participate actively in context specific learning, as opposed to theory classes which are removed from reality. Participants in each program valued the opportunity to gain access to levels of discourse normally not available to operators.

The discourse cannot be rote learned. It must be acquired through participation - enculturation. However once that process is underway, it is possible to develop language for analysing the discourse. Thus the trainees were exposed to multiple layers and forms of language. For example the:

- various languages, genres and dialects of the workplace;
- language of dialogue, debate, analysis and reflection;
- language of enquiry, research, report writing and oral presentation;
- non-verbal language of gesture, spatial and visual elements. (p.103)

Participants had various opportunities to acquire and use language for a range of social purposes in the workplace e.g. negotiating projects with supervisors, researching information from unfamiliar sources, peer tutoring, conferencing with teachers, leading discussion groups, arranging excursions, conducting information sessions through the plant for visitors, presenting reports etc.

The emphasis on active learning and discussion stimulated considerable diversity of response from participants in each pilot program. For example, although the Nissan trainees could have resorted to "standard answers", their flow charts of work organisation [p. 215, 224] show considerable diversity of approach yet all are correct in terms of analysis, overview and interpretation. These tasks involved quite complex categorisation of ideas and use of language and thinking skills.

14.2 Importance of Developing Strategic Competence

Part of the strategy for developing language, literacy and numeracy was to draw upon and maximise the strategic competence of trainees - that is of using their full repertoire of skills, abilities, experience and interests. In this respect considerable use was made of first language proficiency and prior experience to support new learning. The efficacy of this approach was confirmed by the foundry superintendent at HEC, Nick Papadam,

> *I would have tried to come in maybe just a bit lower with some of the things ... so they could cope with it a bit better. But to my surprise, well not really to my surprise, to my amazement, these guys have tackled some fairly hard topics and done it with flying colours. They've done it very well.* [p. 122]

This was confirmed by Senior Engineer Bryan Bardwell:

> *... they're learning more, they're keener, they're probably showing more of their worth, rather than being just a straight machine operator. I mean there's a lot of people out there that really shouldn't be just machine operators, they've got more talent than that. It does highlight a lot of their strengths that we haven't seen before and I guess for future development it's great.* [p. 122]

In planning and researching projects, learners were encouraged to make pragmatic use of individual and group resources to do the bulk of the research which was then translated to more conventional written English, for example, in the safety notes using Greek/English (p. 222) and Lap Luu's project (p.107-109).

Lap spoke four languages, English, Mandarin, Cantonese and Vietnamese, and wrote in English and Chinese characters to do his research which covered metal treatments. He drew upon his practical experience and language concepts of earlier years in a metal processing factory in Vietnam, as well as recent learning and discussion to shape the content. He sought help from a Turkish work mate as well as other operators from the machine shop (different plant). When all the basic research was done, Lap turned his attention to writing and editing his report in English and then worked on the oral presentation.

Such learning experiences provide opportunities to demonstrate particular attributes, especially initiative, adaptability, lateral thinking, creative problem solving and systemic analysis which underpin strategic competence and are essential in a changing workplace. Literacy and language need not, therefore, present an insurmountable barrier to performance.

It is evident that when the emphasis is placed on holistic, meaningful tasks grounded in the workplace, trainees are able to access a range of resources and support, and make effective use of their strategic competence.

Development of Key Competencies and Transferable Skills

The VIC Knowledge Syllabus learning outcomes predate the development of key competencies. However some of these key competencies are to some extent implicit in the draft industry competencies although the learning outcomes as currently stated in the knowledge units are not likely to develop key competencies. Therefore, the pilot programs consciously targeted the development of a number of the key competencies using the following strategies:

- focusing on whole tasks;
- encouraging systemic analysis of workplace processes, production, continuous improvement, problem solving;
- accessing the discourse of the workplace;
- developing conceptual frameworks;
- developing language for critiquing the workplace.

The process of developing analytical skills and being able to think systemically about real issues is very important in contributing to transferability. However each workplace has its own specific discourse which must be accessed, using those skills of analysis, before they can be readily applied elsewhere. Transferability also implies creativity - to find new solutions to old/new problems and to avoid rigid thinking.

A new understanding became evident within the enterprises, and between learners themselves, of the importance of developing thinking skills[8], as opposed to merely absorbing chunks of knowledge. Strategies of analysis enabled learners to recognise similarities and differences between new situations or contexts and those of their previous experience and to explore possible connections, new combinations or adaptations of ideas that may apply in the new context. In short they learnt to adapt to change by developing an intimate and comprehensive understanding of their own particular workplace[9].

The following example from the Ford warehouse case study illustrates detailed problem solving at a systemic level in one of the learning activities. A question was posed in relation to Receiving Stock:

You know a part has been received, but can't find it. It hasn't been binned so where is it? [p. 141]

This task cannot be satisfied by merely giving general answers. On the contrary it requires those skills, abilities and attributes which underpin the competence. What may seem to be a fairly innocuous question is indeed a complex task and involves a very thorough and systemic analysis of the warehouse receiving procedures and the multitude of contextual influences, variables and contingencies which are part of everyday reality in the NPDC warehouse.

This sort of learning is both more complex and demanding, yet easier and more interesting, than generic packages about text book warehouses. Contextual learning is fundamental to developing competence. The importance of such competence is illustrated by the fact that NPDC is the National Distribution Centre for receiving and distributing stock throughout Australia and overseas. The daily value of stock shipped out is $1.1 million, and the value of current NPDC stock (inventory) is $49 million - fairly compelling reasons why contextualising training curriculum is critical.

Systemic thinking for problem solving develops from particular experiences and can be adapted to other situations. However, key competencies cannot be rote learned, nor can they be generalised from hypothetical learning situations[10] as amply illustrated in research literature. They must be developed through experience.

14.3 Understanding the Whole System of the Workplace

One of the key strategies of the integrated model was that of constructing and developing a systemic[11] and holistic view of the workplace[12]. In preliminary discussions with plant managers and employee representatives at HEC, Ford, Nissan and Toyota prior to establishing individual projects, there was unanimous support for participants gaining a comprehensive overview of operations within the plant and an understanding of specific inter-relationships between different areas of plant activity. Further, it was agreed this overview should include a practical understanding of how key organisational elements (scheduling, customer requirements, quality assurance, etc.) impact on production procedures, policies and standards.

For example, in the Toyota Case Study the curriculum took close account of the interrelationships between:

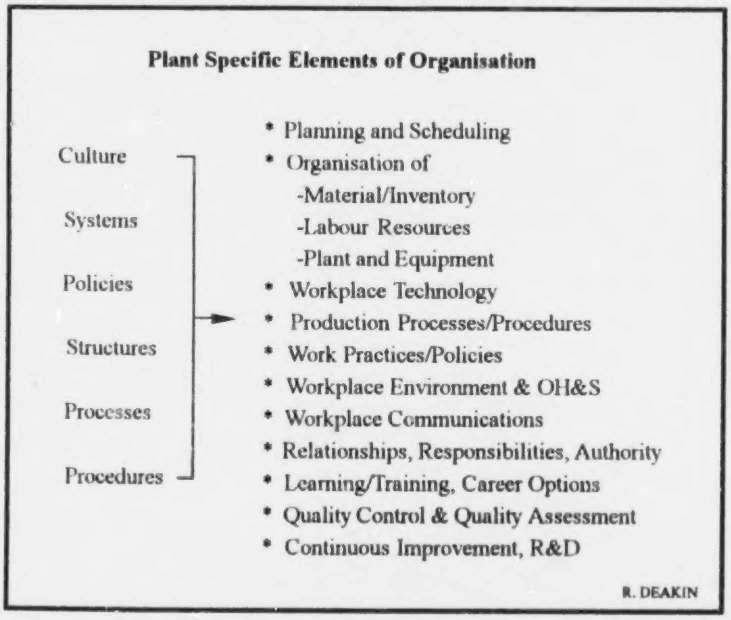
1. The technical systems of the plant (the presses and their tooling);
2. The production control systems of the plant (material and stock control, production scheduling, quality control, etc.)
3. The systems of work organisation (the Departments, the Teams, individual roles and responsibilities etc.) and
4. The social and communication systems of the plant. (p.248)

These four broad systems reflect common elements of organisation (See Figure 14), shaped in this context by their specific application in the Press Shop but derived from and reflecting the cultural and organisational identity of the International Toyota Production System. These same common elements occur in the Foundry Elective, shaped by that specific context and the cultural and organisational identity of the parent, General Motors.

While the elements of organisation may be common to all enterprises in theory and rhetoric, they are nevertheless very different in practice, philosophy and policy. The curriculum must capture the elements of difference as they exist in actual practice, not as theoretical principles in a mythical context. It must also facilitate trainees in developing a comprehensive understanding of the workplace systems and their interrelationships. This understanding also needs to extend beyond the walls of the plant.

Note that Figure 14 illustrates a reconstruction of the core syllabus topics, not as discrete knowledge units, but rather as organisational elements, based on plant specific systems, processes, procedures etc. The organisational elements are interrelated and impact continuously on the activity of the plant. They are dynamic elements and are therefore subject to change either through continuous refinement of the system or through adoption of a new system/policy procedure etc.

FIG 14 CONTEXTUALISING AND INTEGRATING KEY ELEMENTS OF ORGANISATION


Plant Specific Elements of Organisation
Culture
Systems
Policies
Structures
Processes
Procedures
• Planning and Scheduling
• Organisation of
-Material/Inventory
-Labour Resources
-Plant and Equipment
• Workplace Technology
• Production Processes/Procedures
• Work Practices/Policies
• Workplace Environment & OH&S
• Workplace Communications
• Relationships, Responsibilities, Authority
• Learning/Training, Career Options
• Quality Control & Quality Assessment
• Continuous Improvement, R&D
R. DEAKIN

Developing an holistic overview of the workplace requires quite complex skills of analysis and integration of ideas - the kind of skills implied in key competencies. Such skills, however, cannot be rote learned. They are acquired through a fairly sophisticated and dynamic process of "thinking and doing" rather than "memorising"[13].

A very good example of the importance of contextualising the curriculum and learning experiences is aptly described in the Toyota Case Study (p. 261-265) with the account of Ivan's work on the "stacking box" problem in the press shop. Ivan chose to work on this problem for his research project and, in the process, designed, built and experimented with a prototype for a new stacking box and lifting lugs. In the process of resolving the problem, Ivan intervened in the system of raw material preparation and acted upon the system to bring about improvements.

As Senge[14] points out, one of the things which distinguishes innovative organisations and individuals is that they do not simply focus on short term problem solving, to make problems go away, instead they look at contextual influences systematically to bring something new to how they operate. Ivan solved the problem, but more particularly, he dealt with it at a systemic level.

14.4 Developing a Learning Culture

Groups which reflect the Workplace

One of the key features of the integrated model is the use of groups which reflect the composition of the workforce. In most of the case studies this meant that learning groups were mixed ability, multi-lingual, and multi-ethnic. However, the integrated model can be expected to work with other groups, which might for instance, be monolingual, provided that the learning groups reflect the social and working realities of the workplace.

Each of the programs has demonstrated that learning groups which reflect the natural groups of the workplace can:

- promote access and successful trainee participation;
- help to break down stereotypical and prejudicial views about differences in culture, language, age, gender and race;
- facilitate effective learning and the development of Key Competencies;
- promote cross-cultural communication;
- act as a catalyst, and as a support for changes in the workplace.

The case studies have particularly demonstrated the effectiveness of these groups in enabling access to training and promoting successful engagement and participation by non-trades employees. The composition and dynamics of these groups took the focus off difficulties with Standard English language and directed it towards conceptual development, active experiential learning and inquiry, and demonstrations of understanding through practice.

The group learning experiences provided by the programs were instrumental in the development of workplace learning cultures. As David Smith, AFMEU (Vehicle Division) Work Change Adviser, commented:

> *The other thing I've observed, is once the people do get involved, they want to keep training as well, so if we're talking about creating a training-type mentality, where you start at school and you never stop learning, well that's the type of culture that you're trying to introduce. And that's the type of culture that this integrated model is being successful at developing, on-going training. It's not that school-type thing any longer.* [p. 121]

This sense of the learning culture developing was evident from comments in the case studies. At Nissan Paul Willigenburg saw the need to continue the momentum:

> *The big challenge, from my point of view, and their point of view, and in the future - is to keep this thing going. ... At the steering committee meeting which is coming up, I will be saying, somewhere soon we've got to start the process of discussing how does this pilot group continue through the VIC, that's one. And two, when can I start the next group?* [p.238]

At HEC Nick Papadam expressed similar sentiments which were echoed by John Marks:

> *One of my concerns with the VIC and I've raised it with my managers, is that we've got all these guys that we've lit this fire under, right? And the fire's going like crazy. What am I gonna do with them? Where will I put them? So that we don't destroy them or get them browned off and we lose them. The worst thing we can do with something like this is to light the fire and then let it go out.* [p.129]

> *We in fact are going to be left with a little bit of a problem, I believe, at the end of all this. In that we have spent 200 hours educating these people, allowing them to extend themselves beyond their normal job boundaries, motivating them, enthusing them, and after this 200 hours what the hell are we going to do with them? In that they are so switched on, some of them. We are going to have a reasonable task on our hands to keep that level of enthusiasm up.* [p.129]

At Toyota Ufuk Eren, shop steward in the Press Shop, also saw the need to extend the approach demonstrated in the pilot program:

> *Well, actually I'd like to see this done permanently in the whole plantwide, rather than just* [the pilot] *in the Press Shop. ... Yep, this sort of training, the way I see it, it's basically related to people's jobs rather than other issues that don't involve their jobs or what they do in their day to day. So that's what I would like to see, permanently and plant wide.* [p. 273]

The idea of promoting workplace learning was also central to the Ford program as Brian Whitcher explained:

> *It's learning really, instead of training. I hate the word training. Learning really as far as I'm concerned, that's what it's all about. You train animals I think.* [laughs]. *... We really did set out with that in mind, when it was first talked about, that we'd be able to get involved in setting the elective unit up. We really wanted to make it a learning experience, rather than just a training program. That was our idea; that it would be something that you'd be able to use for many years rather than a training course that would only support two or three years and then would be irrelevant and you'd have to start again. We wanted something you could actually build on, and add to, and change.*[p.160]

BEST COPY AVAILABLE

David Smith highlighted the importance of trainees enjoying their participation in workplace learning. It is only when they enjoy their involvement that trainees will voluntarily seek out and promote opportunities for learning. The case studies provide ample evidence of the enthusiasm which was generated:

> *I don't know if I've clearly explained this, but once again, it's an observation, how much the people who have participated have enjoyed it and that's the trick, the trick to developing that training culture that we've talked about. They've actually enjoyed it. I think that's pretty important.*
>
> *When you see them so enthusiastic about it - I mean I think when people start coming in to do this unit on their holidays - they're on annual leave and they come in, two or three hours to do this unit. That in itself says, "Geez, I want to get this. I want to get on with it."* [p.130]
>
> *I've found guys here four hours after their shift has finished, not on company time, coming back and following up on their projects. Their level of enthusiasm is outstanding and I couldn't have asked for more.* [p.120]

Self Esteem and Participating with Confidence in the Workplace

The case studies also emphasise the development of self esteem and confidence. For instance, the Ford NPDC Shop Steward, Len De Kauwe talked about this issue:

> *Well the lesson I've learned with all this sort of training, quite honestly, is that when you get people in a workshop related sort of training program, you can actually see the success straight away. You can* ***see*** *it, you can actually see it happening. ... it's done a lot for their self morale, they're more confident in themselves as human beings. Regardless of being a storeperson or you know, on the job. They've got more self respect now I think. It's like they've seen the light. ... I can't believe it quite honestly.*[p. 161-162]

Len stressed the importance of members developing a thinking and questioning approach. Talking about one of the program participants, he noted:

> *He was saying that prior to this he never asked questions. He was that type of person, sort of a loner, he would never ask. Now the comment I'm getting from him is, "Geez, if you don't ask you'll never know answers. So you won't learn." And he's in his mid-thirties, so it's sort of awakenings for the people. That's what I really think.* [p.162]

Len De Kauwe's views were echoed by one of the participants at Ford:

> *Before I really shy to go and talk to the depot man and the general foreman. Now I got a bit confident and talk to them. Find out my problems and solve them.* [p.161]

David Smith related this kind of shop floor interest, engagement and involvement *to* broader processes of work change:

> *Work change, ... really starts right at the bottom. Unless you can get the people from the shop floor involved ... like you see at HEC, where the people say; "Well now I know what happens before it gets to me,* [and] *after it gets to me, - I can actually recognise a fault, I can go and rectify it, or whatever. To me that's really the beginnings of work change, the real guts of work change.* [p.124]

At Nissan, Sue Pontin commented:

BEST COPY AVAILABLE 305

... you just get that little bit more confidence each time. Like a little bit more self esteem to be able to say what you think, about your job, or people. I don't know, it just makes you think differently. It probably would help me if I went to another place. I mean even outside, socially, with clubs or things. ... You look at the first day of the sessions when people were really nervous to speak out or say anything, even to ask a question. But now it's quite good, people speak freely without having to worry about if they've asked the wrong question or feel really silly. [p.232]

The mixed ability, multi-ethnic groups also provided an ideal opportunity to deal effectively with a range of discriminatory factors which affect participation, including gender bias, harassment, and lack of respect. The Ford case study illustrates this point very well with a female trainee who had already done some training. However, the integrated model's approach to targeting group cohesion and developing appropriate assertiveness and self-esteem made a difference for this trainee.

It's helped me a lot because before I never. Just I work. I never ask anything about anything. But now I know the systems and everything ... now I move around everywhere. F zone, E zone, ... Now I want to know everything. You know I went and asked why they put the parts like this, why that. You know. Before I never. Always I keep my mouth shut. [p. 160]

Shaping and nurturing the development of participants as individuals was important in developing their confidence to participate in workplace change. This involved gradually increasing the level of complexity, diversity and risk taking in the learning activities and encouraging active and reflective learning and independence. It also involved careful monitoring to allow for both a plateau phase and acceleration depending on individual responses to change.

Creating mixed ability groupings obliged the project officers and learners to look at the multitude of factors in the workplace which mitigated against the acquisition and proficient use of English language and literacy. Such factors include noise, combined with industrial deafness, isolation, lack of information, inaccessible information, power relations and systemic factors which are on going, irrespective of training. These factors need to be addressed as part of continuous improvements in training and the development of a learning culture in the workplace.

This is consistent with the principles outlined in the DEET curriculum report "Positively Different"[15]:

> "The inclusive curriculum strives to balance the discrimination, exploitation, and marginalisation of daily life with an educational environment that provides time and space to examine, understand,and plan action to counter inequality. In essence, inclusive classroom practices:
>
> - explicitly examine and positively exploit differences between members of the learning group
> - recognise that individual power relations exist between members of the group as individual personalities and as members of social groups
> - give each person a position from which to speak while not privileging individual views above those of others

- do not accept behaviour or language that oppresses or stereotypes group members
- examine individual power relations between learners in the context of wider social relations
- are explicit about educational and social change as a purpose of classroom learning
- do not offer false promises about the potential magnitude of individual or social change."

14.5 Negotiated and contextualised curriculum

The collaborative process of all stakeholders working together at enterprise level to contextualise curriculum is illustrated in Figure 2 (p. 27). The pilot programs demonstrated very detailed contextualising and showed how this concept goes far beyond the common notion of customising generic content, i.e. of inserting pieces of specific content (model numbers, component types, equipment or process changes) into generic curriculum. The concept of contextualising implies that the curriculum and learning experiences authentically reflect the specific plant and take account of the separate and combined effects of the many systems operating in the workplace.

Each of the enterprises wanted employees to have a more holistic perspective of the workplace and each had a different and preferred basis for developing the pilot program. These differences, and the implicit giant leap from a Taylorist tradition, challenged the ingenuity of the project officers and tested the flexibility of the model to adapt to different constraints and criteria.

- HEC foundry wanted the Foundry elective to be the focus, with provision for core units to be interwoven into the elective.

- Ford NPDC wanted the Warehouse elective to be the focus and was concerned about the apparent irrelevance of (Manufacturing Processes Unit) to the warehouse.

- Toyota wanted its Level 2 Skills in Die Setting and certain core units (from Manufacturing Processes) to be the focus of the pilot.

- Nissan wanted an overview of warehousing operations drawing on both elective and core units for a 40 hour pilot.

With the support of managers and supervisors to engage in innovative and contextualised learning activities, the trainees were able to explore and piece together the "Bigger Picture" of their context, for example,

- Nissan trainees constructed an overview of the warehouses and extended this to their customers, the dealerships. As well as taking into account the whole cycle of production of parts from the design phase, to trial, production, release, distribution and after sales warranty, they also related the role of Nissan to the wider context of the vehicle industry in Australia and Nissan's parent company overseas.

- Ford NPDC trainees developed a similar overview taking into account Ford's Q1 program, the supplier system and the dealership network. Trainees were agreeably surprised to discover how the Manufacturing Process Units (i.e Just-In-Time, TQM, Scheduling, Problem Solving, Elimination of Waste and Continuous Improvement) could be related to the service and distribution focus of the warehouse, instead of the production orientation appropriate for the other Ford plants.

- HEC trainees mapped the extensive territory from Customer Orders and Scheduling through each stage of casting, to Fettling and Dispatch and the implications of JIT, TQM, Scheduling, Continuous improvement etc on each stage. They also included the wider scenario of local and export customers, the relationship between ISO9001 and export markets and the company's changing customer base in Asia.

- The Toyota Training Matrix restricted the training to level two, which presented some constraints, however the project officers worked collaboratively with the Press Shop Production staff and employees to develop curriculum which enabled trainees to develop a broad overview of how particular organisational elements - Kanban, Just-In-Time, Quality Control and Quality Assurance impact on the press plant as a whole and on die press processes in particular. They also looked beyond their immediate workplace to consider other factors such as examining supplies of steel (different grades) and how that supply impacted upon processes, quality and panel reworks in their plant.

Being able to look at the complex inter-relationships of each plant as a whole required the effective contextualising of the curriculum made possible through the collaborative efforts of everyone involved. The extent of the collaboration was considerable in the initial stages of developing the curriculum outline but it increased dramatically and embraced support for learning and assessment in context once the programs were underway.

The response of managers and employee representatives gives some idea of the extent to which successful contextualising of the curriculum was achieved and their satisfaction of being involved. Some of the comments from the case studies have been reproduced below:

Brian Whitcher, Warehouse Manager, Ford NPDC:

> *... I think relevance is the key thing, that and the participants, the supervision, everybody in the place recognises that at last we are doing something that is relevant to the business of warehousing. In the past all the VTC knowledge units have been tailored around manufacturing motor cars. That's the business we're in, but unfortunately we don't have a great deal to do with the manufacture of motor cars. ... but this is very relevant and we've had the opportunity to be involved in the process ... its something that we've always wanted, to be able to have people trained in the expertise of warehousing.* [p.157]

Serge Beani, Toyota Press Shop Production Manager:

I think that the real difference about this program ... is that it now relates to the jobs that people are actually doing on the shop floor. They can see the link about what's being taught up there, and how they can apply that back to their job, or how it fits in. ... So the obvious of having been taught something up [in] *the classroom situation, that really relates to how they go about doing their job, that's very important.*[p.271]

Serge's comments were echoed by Terry Collison, Human Resources Trainer:

This is completely different and it improves upon what we've been doing no end. Because although it [existing VIC training] *is supposed to reflect on-the-job tasks, it doesn't really. Whereas this really does... I think this is the best approach to training that we've tried, it works much better. The people are happy with it, they can relate to it much better. It's a considerable improvement on the way we've done it before. I think this is the way we'll go with all of it eventually. This program will help to push it in that direction.* [p.271-272]

At Nissan Paul Willigenburg, Nissan NPDC Operations Manager, summed up:

I guess the most important thing, the thing I'm happiest about the most, is that this whole thing has been tailored to meet this operation. Right, so it does fit in with what the VIC is all about [but] *it's specific to this operation, it's important to this operation. ... I think that's the most important thing. And it includes all the vital elements that the shop floor people, our personnel people, senior management and our warehouse management all thought were important. So it has all those ingredients in there, meshed together.* [p.240]

Speaking on behalf of the union, David Smith, Workplace Change Adviser AFMEU (Vehicle Division), noted:

... you virtually need to go to each enterprise and write the curriculum that's specific for that enterprise. ... It's not so much the delivery of the training that the enterprises can't cope with, it's the development of the curriculum into something that's really meaningful and the integrated approach to developing the curriculum does give you something that's meaningful. Our members get something out of it; the company gets something out of it; ... the Government's getting something out of it because that's what they want - more productivity for the enterprises. [p.125]

John Marks, Foundry Production Manager, Holden's Engine Company, acknowledged the issue of complexity, and the importance of the curriculum being authentic and correct:

... to someone who's never been in a place like this, it is a pretty complex manufacturing process, and in the end [the project officers] *were able to break it down into relatively simple lots. And they still had to be very careful that information was not too technically difficult, but it had to be technically correct.* [p.129]

14.6 Meeting the Requirements of VIC

In three of the four case studies, a topic matrix was developed (see Chapters 6, 10, 11) to show how the enterprise specific units that were developed as part of this project mapped against the VIC units. The key feature in each case was the way in which the development and achievement of competencies and learning outcomes was expected to occur over time. This was more particularly so with key competencies. The actual details of each program differed in most respects, not just because of the different plants (foundry/press shop/warehouse/etc.), but because the programs reflected the different cultures, work practices and technology. However, in all of the projects there was no doubt that the enterprise-specific curriculum more than adequately covered the VIC learning outcomes. As illustrated in the case studies, assessment was interdependent with learning processes.

Assessment was holistic[16], contextualised and performance based and included:

- conferencing;
- investigative reports (oral and written);
- class presentations (formal and informal);
- oral assessment using genuine components, documents, etc.;
- practical problem solving, defect analysis;
- practical demonstration;
- practical exercises in statistical control (graphs, tables, charts, measurements);
- written assessment/notes/ practical session records;
- group work/meetings/leadership;
- interpretation of documents;
- constructing of flow charts/models/charts/tables.

The standards achieved by program participants were very high, often going well beyond the basic requirements of the VIC. Because assessment allowed for adequate opportunity to reinforce various curriculum areas, all participants who completed programs achieved the required learning outcomes.

In the case of individual projects, the presentations to management ensured that suggestions were given due consideration and often adopted into the workplace or used in some way within the plant. Presentations also played a part in promoting the skills, attributes and positive attitudes of employees, often resulting in a change in management attitude towards shop floor employees and their potential in the workplace. The following comment from John Marks at HEC is representative:

> *Without exception all of the people have commented on how much they have learned ... Their dedication and what they've put into their projects has been very impressive.* [p. 122].

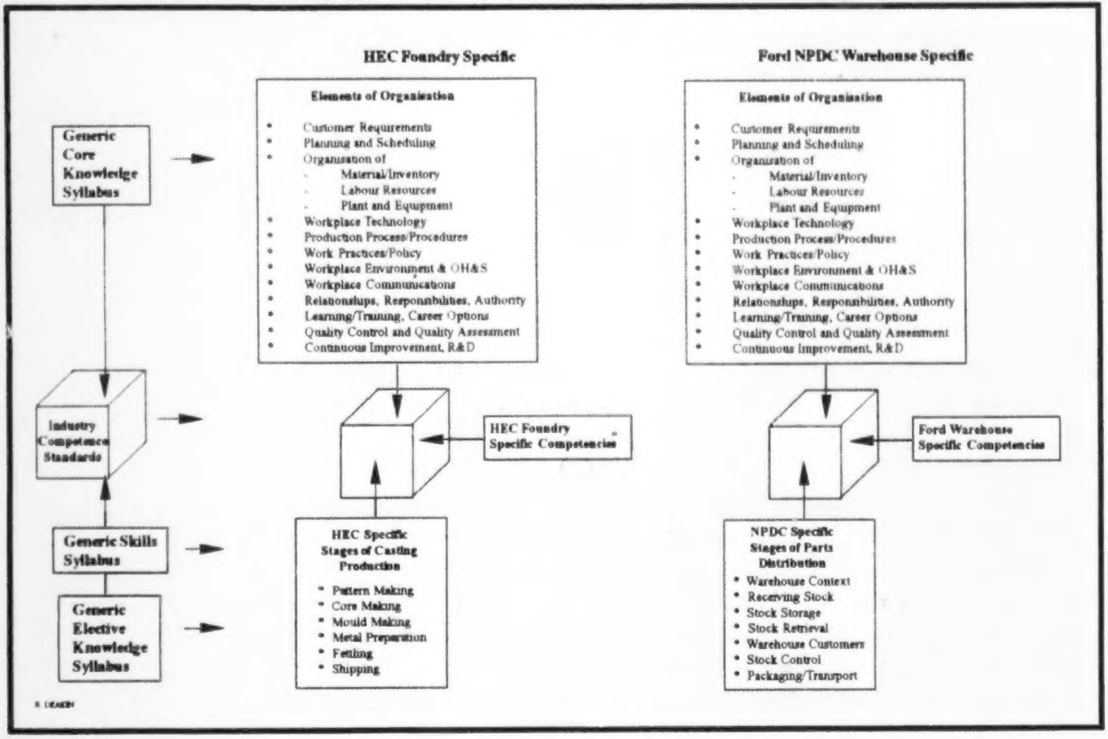
Assessment processes were negotiated with the various stakeholders, including the trainees, with trainees demonstrating that they could meet the assessment criteria in a variety of ways. Written assessment was kept to a minimum as it was generally considered the least appropriate form of assessment. Project officers were particularly concerned to avoid rote learned responses, the use of yes/no responses, double negatives, and multiple choice questions which place significant and unnecessary demands on trainees' linguistic ability rather than workplace competence.

In terms of monitoring trainee progress, individual competency and learning outcomes were recorded as they occurred. In some cases this was countersigned by leading hands or supervisors to indicate that competencies had been achieved and applied on the shop floor. Feedback to trainees ensured that they were aware of the areas which they needed to improve, and of their progress towards the VIC.

14.7 Syllabus Review

One of the outcomes of this project was the way in which the integrated model assisted with the review of parts of the original syllabus. Figure 15 illustrates how the integrated model facilitates the transition from the generic core syllabus to specific organisational elements developed in the HEC and Ford programs (the same applied to Toyota and Nissan).

FIG 15 FROM GENERIC CURRICULUM TO SPECIFIC PROGRAMS - INTEGRATED MODEL


HEC Foundry Specific
Elements of Organisation
Customer Requirements
Planning and Scheduling
Organisation of
Material/Inventory
Labour Resources
Plant and Equipment
Workplace Technology
Production Process/Procedures
Work Practices/Policy
Workplace Environment & OH&S
Workplace Communications
Relationships, Responsibilities, Authority
Learning/Training, Career Options
Quality Control and Quality Assessment
Continuous Improvement, R&D
Ford NPDC Warehouse Specific
Elements of Organisation
Customer Requirements
Planning and Scheduling
Organisation of
Material/Inventory
Labour Resources
Plant and Equipment
Workplace Technology
Production Process/Procedures
Work Practices/Policy
Workplace Environment & OH&S
Workplace Communications
Relationships, Responsibilities, Authority
Learning/Training, Career Options
Quality Control and Quality Assessment
Continuous Improvement, R&D
Generic Core Knowledge Syllabus
Industry Competence Standards
Generic Skills Syllabus
Generic Elective Knowledge Syllabus
HEC Foundry Specific Competencies
Ford Warehouse Specific Competencies
HEC Specific Stages of Casting Production
Pattern Making
Core Making
Mould Making
Metal Preparation
Fettling
Shipping
NPDC Specific Stages of Parts Distribution
Warehouse Context
Receiving Stock
Stock Storage
Stock Retrieval
Warehouse Customers
Stock Control
Packaging/Transport
R DEAKIN

What is very obvious in the cases illustrated is the consistent generic theme of the organisational elements yet vast differences between these plants. If one takes into account the four plants the contrasts are even more obvious. Although Planning and Scheduling plant activities is a theme in each plant, the system used in each (PANDA [Ford,] NAPS [Nissan], MRP2 [HEC] and KANBAN [Toyota]) is entirely different in every aspect, and each is underpinned by different organisational principles.

Therefore the collaborative process in each plant ensured that the abstract concepts and topics of the core syllabus were translated into the day to day realities, not as fragmented bits but as elements linked systematically. The following examples are taken from the foundry and warehousing elective units.

The original VIC foundry elective syllabus was considerably revised to incorporate the reality of foundry operations at HEC with an emphasis on key variables, quality

BEST COPY AVAILABLE

control systems, etc. The conceptual framework of the elective, illustrated on page 80 and set out in detail on pages 83-90, demonstrates how these and other elements of organisation impacted on each stage of production. Hence, scheduling, JIT, Quality Control, etc. were revisited at each production stage e.g. Core Room Scheduling, Mould Line Scheduling, Fettling and Shipping Scheduling. Documentation of these syllabus amendments under the customisation clause for the VIC accreditation is being completed currently.

A review of the VIC Warehouse Elective syllabus was undertaken by Ann Eller, Phillipa Thomas-Walsh and Toni Roberts in the light of their work at Nissan and Ford and their experience in the HEC (production) and Toyota (Parts and Accessories) warehouses. Their work provides a very good illustration of how contextualising the elective syllabus helped to identify the essential elements which had been left out of the accredited syllabus. In their revision of the syllabus these project officers have shown that enterprise specific training programs of quite different content, contexts and organisational systems (PANDA/NAPS) can be developed yet maintain consistency with suitably expressed generic learning outcomes. They also showed that various units can be arranged in different combinations to obtain optimum integration of particular concepts and to facilitate particular learning experiences. The revised Elective Syllabus contains the following:

- 15 new topics, Learning Outcomes & Assessment Criteria;
- 11 revised topics, Learning Outcomes & Assessment Criteria;
- 2 topics deleted;
- 3 topics absorbed into new or revised topics.

For an overview of the nominal hours for the warehousing elective, see the following page. Delivery time and assessing are reflected in the nominal hours devoted to different units which were altered to reflect the needs of the enterprise depending on whether it is primarily a warehouse supplying the production line or whether it distributes parts and accessories nationally to dealerships.

Consider one of the suggested assessment tasks in the revised syllabus, e.g. topic 12.18 on Customer Queries/Problems is,

> "Prepare a summary chart analysing the causes, consequences and possible solutions to problems experienced by customers in relation to parts received from the warehouse."

This task requires a systemic analysis of warehouse customer queries/complaints data. The learners must consider the specific and systemic causes of the problems, the consequences to customers, and remedial or innovative solutions. Ideally this is done in groups with trainees co-operating to maximise the process of analysis and synthesis of systems, data, and work practices. It involves communication skills essential to group/team work as well as those skills essential to clarifying the ideas and succinctly expressing them. Because the task requires systems analysis it moves away from the limits of linear cause and effect which often identifies symptoms not causes.

The curriculum also facilitates a logical and developmental sequence in acquiring and applying skill and knowledge. Hence, in the revised curriculum, the units are interdependent as opposed to self contained entities (packages). For example, the assessment task in E12.18 was preceded by E12.6. (see below- from the revised syllabus)

Learning Outcomes

Learning experiences must be designed to develop specific knowledge, as well as the generic skills which underpin the acquisition and demonstration of that knowledge. The following example illustrates the range of generic skills which are implied in the learning outcomes and are essential to demonstration of those skills an knowledge.

E12.6 Receiving Stock 6-7 Hours

Learning Outcome: Summarise the purpose, procedures and documentation for receiving stock and the relationship between that operation and other sections of the warehouse.

The trainee must:

1. **Examine** the current procedure, **analyse** the key tasks and sub tasks, **organise** these in the correct **sequence** and **identify** the purpose and type of documentation used at different stages of the receiving process for different stock.
2. **Compare** the receiving procedure, documentation and stock plant for different types of stock, and differences, exceptions etc.
3. **Analyse** the relationship between the function of receiving stock and the function of other relevant departments eg. Accounts; Materials Purchase and Supply.

The suggested assessment task illustrates how those learning experiences lead to the trainee demonstrating the learning outcomes.

Suggested Assessment: *Completion of a project including -*

- *a summary outline of the purpose, procedures and documentation for receiving stock into the warehouse using data obtained through interviewing key personnel and research*
- *flow chart(s) of receiving procedures used for different delivery/stock types*
- *a summary of problems identified within the receiving department and recommendations about current practices to achieve an effective receiving procedure.*

These learning experiences and assessment tasks must be centred in and related to the organisation of the plant. They cannot be rote learned from a package. These tasks also demonstrate the difference between assessing rote learning of general ideas and of assessing learning outcomes with real application to the workplace. Employees with difficulties in English language and literacy find a real task like this much easier than rote learning decontextualised generic concepts.

Thus the development of key competencies and transferable skills is facilitated by contextualised learning which enables employees to gain a critical, comprehensive and systemic understanding of their work and their workplace.

14.8 Concluding Remarks

The driving force behind the training agenda has been the goal of achieving a highly skilled and flexible labour force with emphasis on:

- vocational competence and adaptability;
- enterprise and initiative, communication, team work and responsibility;
- broad and transferable skills, and attitudes which equip the workforce to adapt to and influence change.

Parallel to these goals has been a government commitment to access and equity in training for those employees most likely to be disadvantaged and marginalised.

The integrated model evolved to address these issues of access and equity and to ensure that diversity in the workforce could be turned to positive advantage. The model, as reflected in each of the four case studies, laid the foundations for a learning culture in which the diversity, potential, and involvement of all employees would be fundamental. In each instance, the model was embedded in the specific context as a framework on which to construct a learning program which could respond to and reflect the dynamism of that workplace.

The emphasis in each program was on learning; not learning about narrow vocational tasks or general ideas, but learning which was systemic and focused on developing strategic competence. The case studies reflected the development of deeper conceptual understanding in terms of cognition of problems, and of higher order analytical thinking. The curriculum dealt with the complexity of real life situations in each plant and provided holistic learning experience [17] to challenge learners. These experiences took them from the isolation of their past roles into new opportunities, relationships and situations. It is the skills of analysing new and different situations, problems, processes and systems in their own environment which are transferable to other contexts. The learners became adept at predicting, recognising and constructing different scenarios and matrices of variables which impact on the workplace. These learning experiences facilitated their participation in the language and discourse of supervision, management and technical systems.

The project officers became part of the workplace culture, in order to understand and draw upon the life and language of the plant. They were teachers, facilitators and brokers, as well as fellow learners in this process. They had the task of assisting the various stakeholders to work together to produce a curriculum which reflected the realities of the workplace and acknowledged the needs of all stakeholders. They also had the task of creating a learning environment in which learners of diverse needs, abilities and skills could learn together in groups which reflected authentic workplace groupings. This criteria for learner groupings is fundamental to the model because access and equity is best served by utilising a positive paradigm which turns diversity to positive advantage.

The case studies highlight that successful participation is possible when learners with different abilities are encouraged to make effective use of the full repertoire of their experience, skills, abilities and attributes. Hence the focus on holistic learning and developing strategic competence to enhance and support participation in training. This strategy removed the unnecessary requirement of developing particular levels of standard English before undertaking accredited training. It also allowed trainees to progress uninhibited by anxiety about deficits in language and literacy.

The other critical element of this seeming contradiction was the focus on participating in the dominant discourse of the workplace and acquiring the language of that discourse. This language, in the context of associated behaviours, comprises the currency for participating in new opportunities, for contributing to innovation and change and for demonstrating new competencies. It was not the language of the project officers nor does it conform to the norms of standard English. Its semantic elements and different genres are essentially foreign to most people outside the warehouse, foundry or press shop, therefore each project officer had to acquire the language of the particular workplace through a process of active use.

Project officers were all specialists in teaching literacy, language and numeracy. They were selected for their ability to teach across the curriculum and to adapt to different learners, content and contexts. Their skills were essential to devising authentic curriculum and appropriate learning experiences and to shaping and extending the development of language and literacy of participants. Learners were encouraged to draw on all language resources available to them including their first language and the lingua franca of the plant in order to engage in extensive dialogue with other learners, employees and staff in the workplace. This enabled the enhancement of language, literacy, numeracy and associated skills to a level which would otherwise not have been possible within the given timeframe.

By embedding the integrated model in the workplace, it was possible to overcome the barriers and anomalies inherent in the generic curriculum.

Endnotes

1. Pea and Chi et. al. argue that problem categorisation occurs in context in a culturally influenced way. Therefore, separating theory from practice in learning undermines the development of interpretive skills essential to transfer of learning to other situations. Pea, R.D. (1987), "Socialising the knowledge transfer problem" *International Journal of Educational Research,* 6, 639-663. Chi, A.T.H., Feltovich, P.J. & Glaser, R. (1981), "Categorisation and representation of physics problems by experts and novices", *Cognitive Science*, 5, 121-152.

2. Glynda Hull (1993) argues that there is a need to move away from the popular discourse of workplace literacy which is grounded in an individual deficit model of what people are unable to do, what they lack, how they fail, and to re-think our own concepts and practices. '...we might do well to study workplaces and communities to see what kinds of indigenous structures and practices might be supported and built upon.' (p.41) "Hearing other voices: a critical assessment of popular views on literacy and work" in *Harvard Education Review*, Vol. 63, No. 1, Spring.

3. Mawer (p.17) emphasises that a broader view of language ability would include the concept of strategic competence - the ability to make most effective use of available abilities in carrying out a given task is seen as a general human capacity. She argues that although many workers have acquired basic interactional language skills and use approximative grammar, vocabulary and pronunciation, they are nevertheless 'spontaneous, fluent communicators who make full use of contextual clues and communicative strategies' and are capable of successfully completing quite complex workplace tasks using both strategic competence and language competence. Mawer,G. (1992), "Developing New Competencies for Workplace Education" in *Prospect* Vol. 7, No. 2.

4. O'Connor urges that educational intervention must assert and articulate the existence of workplace and worker literacies. *ALBSAC News* No. 5, September 1993. p.2.

5. Gee gives very valuable theoretical and practical insights into language acquisition and its relationship to various discourses which an individual might participate in or be influenced by. Gee, J.P., (1990), *Social Linguistics and Literacies: Ideology in Discourses*, The Falmer Press.

6. Mawer (Ibid.) argues that communicative competence in the workplace needs to emphasis task completion and successful management of an interaction rather than just linguistic accuracy.

7. Mawer (op.cit.) puts the case that language and literacy needs to be integrated into the mainstream and the rhetoric of providing equal opportunity for all should be translated into tangible realities.

8. Rebecca Soden, of the Scottish School of Further Education believes that cognitive theories about the process of thinking and developing such skills have the power to revolutionise vocational education. Soden, R. (1993), "Vocational Education for a Thinking Workforce: A Vygotskian Perspective", *International Journal of Vocational Education and Training*, Vol. 1, No. 1, 39-47.

9. Perkins and Salomon emphasise the important link between a rich knowledge base and associated and interdependent cognitive skills. Perkins, D.N. & Salomon, G. (1989) "Are cognitive skills context bound?" *Educational Researcher*, January -February, 17-25.

10. Chi et. al. (1981) discovered that tertiary students could answer theory tests accurately but failed to apply that understanding to new problems or situations because they could not look at new situations as systems and interactions within the systems. op.cit., p.145-182.

11. Kazemak et.al. (1992) highlight the application of Systems Theory for developing a conceptual framework of the context in which language and literacy is being acquired. "Systems Theory: a way of looking at adult literacy education" *Convergence*, Vol. xxv, No. 3.

12. Constructing such a perspective of the workplace is addressed in this model in part from a particular perspective of literacy and language, which defines language and literacy as determined by "systems of meanings arising out of the organisation of social institutions" and the "genres" characteristic of those institutions. Kress, G., (1985), *Linguistic Processes in Sociocultural Practice,*, Deakin University Press, Geelong.

13. According to O'Connor (op.cit.) such an understanding of the workplace would require a perspective of workplace learning as multi-dimensional and consisting of complex contexts, meanings and practices in different and shifting configurations requiring an understanding as to why and how

workers actually use language and literacy to accomplish job performance, and a view that workers, through their interactions, activity and relationships are constantly learning.

14. See Senge , P.M., (1990) *The Fifth Discipline*, Random House Australia, N.S.W. , p.13.

15. Shore S, Black A, Simpson A, Coombe M, *Positively Different:Guidance for Developing Inclusive Adult Literacy, Language, and Numeracy Curricula - Executive Summary*

16. Hall (1994) argues that curriculum comprises far more than outcomes and that assessment should be part of the learning process. He rejects linear approaches (starting with objectives and ending with assessment) in favour of a circular, interactive approach which integrates assessment with the learning process. Hall, W. "Competency-based training and assessment", NCVER.

17. This learning was based on experiences characterised by what Laur-Ernst (1993) describes as 'sets of opposites' in "Learning within a work context: Training Concepts, Experience, Development" in Hall, W.C. (ed.) (1993):

'Proximity and distance: learners are immersed in real-life operations; ... directly involved in the technical and social processes taking place with the company and perceive themselves within this interrelational context. But they also need distance to appreciate the overall perspective, to find their bearings, to position themselves and their own work within the overall process.

'Concreteness and abstractness: learners have to cope with the work situation and job assignments with which they are confronted; ... become familiar with a wide range of work problems; ... find out what certain work process involve, how to tackle the work, how the work is structured and organised. This company-specific experience and knowledge is abstracted step by step and to various degrees to single out the main features and their interrelations, i.e. its regularities and structures are made intelligible to them. It thus acquires an interdisciplinary, general significance and facilitates comparison, adaptation, transfer and change.

'Routine and innovation: any occupational activity has some repetitive elements; learners gradually learn these routines, starting with simple skills and going on to execute complex tasks. Routine is mentally less strenuous; one no longer needs to think about how to execute these tasks. Alongside this, ... and apparently far more frequently than in the past -workers are confronted with new, unusual, ... situations. These call for improvisation and innovative solutions because they defy familiar rules and the lessons of experience. They have to develop both the ability to handle routine work and the ability to be flexible and creative in coping with situation and tasks.

'Action and reflection: learning within a work context means taking action, becoming actively involved in order to make a decision, to design, to process. Practical assignments are a challenge to act; the subsequent action is of differing quality depending on the stage of learning reached. Practised action has to be reflected on, reconsidered ... analysed and evaluated with a view to its impacts, functionality and quality. This is something trainees also have to learn. This feeding-back of experience, this analysing of action procedures and their result, the comparing and contrasting of different approaches and strategies promotes action which is deliberate, well targeted and flexible.

'Intentional and spontaneous learning: training is organised and learning processes are designed in such a manner that the goal targeted by the trainer is reached by as many learners as possible. The subject matter to be learned is not left to chance. Every trainee should attain at last the prescribed qualification standard. Alongside this intentional learning, a spontaneous, individual type of learning usually also takes place, a type of learning which is usually not - or only indirectly - subject to 'control'. Informal, unplanned learning is noticeable in open situation, when no one points the way to the answer, when the learner works out how to handle the problem.'

Chapter 15
Conclusions, Implications and Recommendations

The experience of the project and its outcomes, as described in the case studies and chapters 13 and 14, suggest a number of issues and implications which need to be considered. Many of these issues have implications which go beyond this project. If followed through they may influence thinking about a wide range of practices, not only in language and literacy provision, but across a range of concerns in vocational education and training. This chapter presents the conclusions, discusses some of the implications and makes recommendations.

15.1 Resourcing and Managing Workplace Learning

Support for Workplace Learning

The pilot programs depicted in the case studies show what can be achieved, even in relatively small scale workplace learning projects. However it should be noted that such initiatives require support to achieve their goals. This action research occurred within a larger project which supplied much of the human, educational and management support for the project officers. For instance, several of the project officers commented on the importance of their day-to-day work at the enterprise level not being bound up with financial and administrative concerns. In order for the project officers to operate effectively support was required from multiple sources:

- enterprise management (at various levels);
- shop floor (at various levels);
- union (at various levels)
- project manager and the NALLCU team.

The establishment of project steering committees at each site was important. Equally so was the requirement for the industrial parties to reach some agreement about the purposes and parameters of training within the enterprise. Enterprise bargaining processes are important in the development of effective training if the latter is to have any significant effect on productive activity and the development of more humane and socially just workplaces. The programs that are developed need to be enterprise specific and seen as part of the broader processes of change within the enterprise/plant.

As noted earlier in this report, the integrated model sits in the midst of complex political, economic and industrial processes. Although the model promotes workplace learning, the workplace educators, trainers and employees on the ground are not in control of all the variables. Practical support for the processes needs to be demonstrated by stakeholders at all levels. Conversely, the industry and particular enterprises, need support in the processes of collaborative curriculum development and workplace learning.

The experience of this project suggests that it is helpful to characterise effective training as a participatory process characterised by action, interaction, dialogue and inquiry. It is very much a two-way process. The project has exposed the myth that a general curriculum which is abstract and decontextualised can be readily transferred from one context to another. Unfortunately the proliferation of various training packages and modules sustains the view that training is about delivering fragmented knowledge. This is a simplistic one-way vision of training. One of the key factors in the success of the pilot programs was the close collaboration and involvement in, and subsequent ownership of, the programs by a wide range of stakeholders at the enterprise and plant levels. This establishes a fundamental connection between the curriculum development processes and the implementation or conduct of the training program.

In a changing workplace environment, curriculum must be responsive to changes in technology, work processes, practices, materials and so on. Unless those who make use of the curriculum are involved in its development it becomes difficult to ensure its relevance. The feedback processes necessary to maintain responsiveness need to operate from the "bottom-up", not merely from the "top-down". Unless the various workplace personnel involved in these changes are also involved in the ongoing processes of curriculum development and re-development it is virtually inevitable that curriculum will become redundant in a short space of time and industry training needs will become irrelevant.

It is important that the curriculum development process should provide a coherent, meaningful and contextualised framework to facilitate learning. However, it is in the implementation process that this framework needs to be fleshed out and developed. As Phillipa Thomas-Walsh noted in a discussion on these issues,

"*You can't write the life into training, you have to breathe the life into it.*"

The implementation process also provides the active process for reviewing and updating the curriculum. It is essential therefore that those involved in the implementation are also involved in the review, editing and continual re-design of the curriculum. The separation of program development processes from the "delivery"of training is not in the best interests of enterprises, and in particular, it is not in the best interests of workplace learners.

These insights challenge the prevailing view that curriculum can be written in one place and time, by expert curriculum developers and then customised and "delivered" in another place and time by virtually any teacher or trainer.

Experience from this project suggests that learning programs need to be developed specifically, not just at enterprise level, but at plant level as interrelated parts of an holistic training program. This local development process of relevant curriculum is essential for the development of a supportive learning environment in the workplace. Involvement in this process requires:

- commitment from industry personnel to the development of their own training programs;
- ownership of the training and its consequences at plant and enterprise level;
- input to the review and continuous improvement of training.

The project has demonstrated the need for funding authorities and curriculum developers to provide enterprise and plant personnel with support for their own curriculum development processes. It is apparent that seeding grants and expertise need to be made available as the industry players may need practical support to initiate such processes. This is not a need for pre-packaged modules. It is rather a need for processes and strategies to provide guidance and support in developing curriculum which genuinely reflects the realities of the particular workplace whilst still ensuring that the programs are educationally sound and consistent with industry/national standards. The model offered in this report provides a very effective strategy for providing this support, whilst conventional pre-packaged approaches effectively ignore the very processes and collaboration which are essential to workplace change.

Recommendations

1. That accredited training in the vehicle manufacturing industry:

1.1 be developed and continuously improved by the industry stakeholders at plant and enterprise levels through processes of active collaboration and involvement.

1.2 draw upon the technical and functional knowledge and expertise of the workplace to develop inclusive curriculum and appropriate learning materials and assessment tasks.

1.3 value, build upon and extend the experience, skills, ability and potential of the employees.

2. That training providers ensure that their curriculum personnel are skilled in and committed to facilitating collaborative processes which result in appropriate enterprise specific curriculum.

3. That funding authorities direct resources towards supporting the industry and enterprises in the collaborative processes of developing appropriate and contextualised curriculum and workplace learning.

Cost Effectiveness

The project also highlights the need for the costs of training to be considered in relation to its effects. If the intent of training is to bring about change on the shop floor, to stimulate on the job learning and continuous improvement, if in short, it is supposed to "make a difference" then training which does not "make a difference" cannot be cost effective.

A superficial argument of cost effectiveness is often used in defense of a modular approach to training. However there is no evidence to suggest that the mass production of modules is cheaper than local and contextualised curriculum. The experience of the project suggests that the most effective programs are owned by the stakeholders and grounded in the workplace.

If training is to facilitate and support processes of workplace reform, it must designed to facilitate qualitative changes, both on the shop floor, and throughout the various levels of the organisation. It is essential therefore, that review and evaluation strategies in vocational education and training be framed in terms of the anticipated outcomes or purposes of the training. They must also address the need for qualitative data on changes in attitudes, perceptions and understandings rather than narrow statistical or quantitative data (eg. student contact hours). Such traditional measures do not necessarily touch upon the key factors which need to be considered in assessing the impact of training initiatives.

Recommendation

4. **That training providers use qualitative methods to review and evaluate the effect of training initiatives in terms of their impact on learners and the workplace.**

15.2 Learning and Curriculum Issues

Language, Literacy & Numeracy of the Workplace

In relation to these issues the results of this project suggest three conclusions:

- the authentic language and literacy of the workplace is a key variable in the processes of training and workplace reform;
- conventional notions of proficiency in Standard Australian English do not accurately reflect the authentic language and literacy of the workplace;
- factors in addition to employees' language and literacy skills are equally important to accessing and successfully participating in training and the processes of workplace reform.

On the first point, the case studies have demonstrated the importance of accessing the dominant discourse of the workplace. Contextualising the curriculum through critical and collaborative processes is essential to ensuring that the language and literacy which employees encounter in training is a reflection of their real work life.

The study also suggests that conventional notions of proficiency in standard English may have relatively little relevance to the language and literacy used in the vehicle manufacturing industry. Streaming of applicants for training and training assessment practices based on standard English proficiency (with particular forms and surface features not critical to the workplace) are likely to have a discriminatory effect.

It is possible to conduct effective workplace training programs with individuals with variable and often limited English language and literacy skills. Given appropriate curriculum design and implementation, given the right industrial relations climate, with commitment from the key stakeholders, and given sensitive and skilled teachers/trainers, language and literacy levels do not need to present a major barrier. Indeed the case studies demonstrate that the model not only provides access and stimulates participation, but it also enhances the participants' language and literacy development, particularly in relation to the semantic features of the workplace language.

Furthermore, focusing the spotlight upon language and literacy, as if it were the key issue, has unfortunate consequences. It serves to perpetuate the myth that industry's problems are due to the inadequate language and literacy skills of its non-trades employees thereby distracting attention from systemic issues. There is a danger that this same myth will be perpetuated while inappropriate curriculum and training methods continue to exacerbate the difficulties faced by large numbers of non-mainstream and marginalised people.

Recommendation:

5. That accredited training in the vehicle manufacturing industry:

- **5.1 be based upon, and designed to extend the authentic language, literacy and communication practices of the particular plant/enterprise.**
- **5.2 utilise the linguistic and cultural diversity of the workforce as a positive advantage.**

Contextualisation

As reported in the findings of the project in chapters 13 and 14, the case studies have demonstrated that the authentic language and literacy of the workplace is a key variable in training. Contextualising the curriculum through critical and collaborative development processes facilitates access to the dominant workplace discourse.

This amounts to a choice between context specific curriculum which promotes genuine workplace learning and has a better chance of leading to transferability of skills or generalised curriculum. Contextualising curriculum in the ways described in this report requires the active collaboration of personnel across all levels of the plant/enterprise.

The project also revealed that effective contextualisation of curriculum involves considerably more than superficial "customisation" of packages. Typically, the language of packages does not reflect the dynamic language and different genres of the workplace. It is only when curriculum is effectively contextualised that authentic workplace language is incorporated into the training.

Access to training and successful participation is significantly enhanced when the language and literacy of the training reflects the language and literacy of participants daily work. This language has familiarity, relevance and meaning derived from real experiences.

Recommendation:

6. **That accredited training in the vehicle manufacturing industry be enterprise/plant specific and fully contextualised to take account of the particular activities, needs and goals of employees and the workplace.**

Key Competencies and the Transferability of Skills & Knowledge

In this project, learning experiences focused on the development of key competencies as an important outcome. Whilst the content of the curriculum was contextualised to the particular workplace, the emphasis in content was on an holistic overview of the processes and systems that operate in a workplace. Reductionist views which see training only in terms of specific tasks and direct instruction are unlikely to lead to the kind of active, collaborative, collective and inquiry based learning which characterised the pilot programs and which is required to stimulate and sustain processes of workplace change and continuous improvement.

The learner's view must go beyond the work station or specific job site to include an understanding of the entire plant's operations; and then to the place of the plant within the enterprise; and onto the role of the enterprise within the industry. Ultimately employees need also to understand how the industry fits in relation to the wider community. Without such understandings rhetoric about national and global markets and international competitiveness remains quite meaningless.

The learning experiences in these programs were designed to encourage discussion, analysis and critical thinking skills. The questions related to "why?" rather than "what?" and "how?" Problem solving was centred on real workplace problems and included group processes of identifying the problem, identifying possible solutions, analysing the options and negotiating the resolution of the problem. The emphasis was on systemic identification and solving of problems rather than narrow linear strategies. This process was mostly undertaken in small groups or in the format of formal meetings, thus reinforcing skills of working in groups and managing meeting procedures.

The transferable skills and knowledge that emerged from this process were those of the key competencies. The use of content directly related to the working life of participants ensured that they also developed an in-depth knowledge of their workplace and the language of the dominant discourse. Thus the resolution of problems often resulted in direct action or real workplace change and developed the confidence of employees to engage in that discourse.

Conversely, the development of an in-depth knowledge of their own workplace enabled participants to enter a new environment and quickly come to terms with the systems and processes. Their key competencies ensured that they asked themselves (and others) the relevant questions, such as "what is the same?", "what is different?" and "why do it this way?"

An understanding has developed within the automotive industry of the need to develop key competencies in all accredited curriculum. This project has helped to demonstrate how this might be achieved.

Recommendation

7. That accredited training in the vehicle manufacturing industry:

7.1 reflect a systemic and holistic view of the learner, the learning process and the workplace in its broader social and industry contexts.

7.2 emphasise the development of key competencies including: analytical, reflective, systemic and creative thinking and strategic competence to facilitate active participation in continuous improvement and workplace change.

Flexibility in Training and Assessment

The rhetoric of flexibility and flexible delivery is widespread throughout the training system. However this project suggests the need to consider the notion of flexibility in new ways. If training is to remain in tune with the day to day realities of workplaces which are constantly changing, then the training curriculum must be dynamic. It must be capable of anticipating and responding to change, sometimes at very short notice.

The integrated model has demonstrated a capacity to provide for the flexibility of workplace learning characterised by: the ability to respond to the workplace context and its changing needs; the capacity of the programs to meet the diverse needs of learners; the ability to accommodate the needs of shift workers; the wide range of active, experiential learning activities. Pre-packaged training can not provide this kind of flexibility. By its very nature it predetermines the activities and outcomes of the program rather than responding to the needs of the learners in the workplace context.

This project suggests that flexibility and responsiveness of training is best achieved through processes which support the direct involvement of the stakeholders in that training. The stakeholders need to engage with and shape the curriculum, for their collective needs.

There is a need for flexibility in the pathways to competence and in the ways competence is assessed. The case studies show how diversity of individual needs was addressed to achieve the desired learning outcomes. The projects demonstrated a variety of strategies to effectively assess learning outcomes and that it is possible to use different assessment strategies to accurately assess the same learning outcome. Similarly, program content can be effectively contextualised and at the same time meet the requirements of an accredited syllabus.

If issues of access and equity are to be addressed through mainstream training, then programs must have the flexibility not only to accommodate differences, (eg. background experiences, work context, gender, language, ethnicity etc.) but to turn such differences to positive advantage in the learning environment. For curriculum to generate the kind of enthusiasm, interest and commitment which was demonstrated in the pilot programs it must have relevance for all the stakeholders.

Recommendation

8. **That training providers develop strategies to address the need for flexible workplace learning through collaborative program development processes which ensure curriculum is contextualised and relevant to the stakeholders at the plant/enterprise level.**

9. **That trainee performance in accredited training is assessed in terms of meaningful and holistic performance criteria which are relevant to the particular workplace context, its language and culture.**

10. **That funding and accreditation authorities promote flexible workplace learning through curriculum guidelines and development processes which promote collaborative development and contextualisation at the plant/enterprise level.**

Workplace Learning Groups

The case studies have described the nature of the mixed ability and multi-lingual learning groups which characterised the pilot programs. There is ample evidence of their success in promoting involvement and participation in contexts where English language and literacy difficulties might have presented barriers to participation.

The nature of these inclusive groups was important for all, not just for those traditionally in the minority, disadvantaged or marginalised position. The development of leadership skills for instance, requires more than the ability to speak out with clarity and confidence, this ability needs to be balanced with the ability to listen with sensitivity and patience. Listening skills are also extremely important in cross cultural communication; it is not just the speaker who is responsible for effective communication. The deliberate and strategic promotion of peer learning, partnerships and supportive networks was designed to promote non-discriminatory behaviour and positive attitudes towards differences in gender, culture, ethnicity and language. This was a strategy directed not merely towards more effective classroom learning, but towards the growth of a supportive learning culture within the workplace.

As with each of the elements of the integrated model, the success of the mixed ability, multi-ethnic groups was dependent upon the use of inclusive curriculum contextualised within the discourse and practices of the particular workplace in question. The integrated model represents an holistic, or systemic approach to workplace learning and change. The different elements of the model, taken in isolation, are unlikely to produce dramatic results. Taken collectively however, they represent a substantial shift from traditional approaches and a new orientation for workplace language and literacy programs and the provision of accredited training.

Recommendation

11. That accredited training in the vehicle manufacturing industry promote access and equity through learning groups which reflect the social and organisational reality of the workplace (e.g. mixed ability, multi-ethnic groups).

Active, Experiential Enquiry Based Learning

The results of the pilot programs suggest the importance of vocational training which provides a stimulus for engagement and involvement. The notion of training as something one receives, rather something which one is actively involved in, is widespread throughout vocational education and training circles. Such a view suggests learning as a passive process, with the trainer "doing" the training.

The programs which generated most impressive results through this study characterised workplace learning as active, collaborative and enquiry based. They promoted the view that trainees needed to accept responsibility for their own learning. They expected learners to be active participants, they modelled and discussed investigation and problem solving techniques, they required trainees to draw upon and share their experience.

Recommendation

12. That accredited training in the vehicle manufacturing industry facilitate collaborative enquiry and experiential learning to support and enhance effective employee participation and contribution to a workplace learning culture.

15.3 Implications for Trainers and Teachers

Industry Trainers

One of the major implications of this work is the need for those responsible for workplace training to develop sophisticated understandings and strategies which support workplace learning and change processes. This seems to be true for a wide range of possible trainers and facilitators, including TAFE teachers, enterprise training officers and shop-steward trainers as well as supervisors, group leaders, and managers. The multi-level, mixed learning groups mentioned above require skilled facilitation and support. The development of learning networks and partnerships requires careful management. The critical and collaborative curriculum development processes advocated in this report require well honed consultancy and negotiation skills. An overall impression of the pilot programs in action is that they relied heavily on the commitment and the calibre of the project officers. However the study also showed the potential of workplace trainers, supervisors and other personnel to facilitate these processes if given appropriate training and support.

It is an issue of considerable concern that training for many workplace trainers often goes little further than presentation skills on the assumption that this is all that is required to deliver pre-packaged modules. The experience of this project suggests that there is a wide spread and pressing need for professional development which addresses the processes by which curriculum can be developed critically and collaboratively with the stakeholders who stand to benefit from the program. Such processes can and should be learned by those aspiring to facilitate workplace learning and change.

Furthermore, professional development programs for workplace trainers need to use the conceptual framework and the strategies implicit in the integrated model. This implies that the professional development experience should model the principles, processes and practices which trainers would be encouraged to promote in their work with trainees/employees in their workplaces.

Thus programs should be accredited and designed to open up career pathways. They should be active, experiential and inquiry or project based, linking theory to practice and promoting holistic development of the trainer and his/her professional competence. Trainers need to experience effective learning if they are to be effective facilitators of learning. Their professional development programs should be contextualised so that each program/project is directly relevant to, and based upon the real world requirements of each trainers' particular workplace context and requirements. It is also important that programs are developed collaboratively with the active involvement of all the stakeholders.

Recommendation

13. That professional development opportunities for workplace trainers:

13.1 incorporate the key principles, conceptual framework and strategies implicit in the integrated model and address the needs of trainers in assessing and documenting workplace performance in relation to industry and other competencies.

13.2 provide skills training in collaborative curriculum development and the facilitation of integrated training.

Workplace Teachers

The distinction between workplace teachers and trainers is becoming increasingly untenable. This project demonstrates the need for skilled professionals to facilitate the processes of workplace learning and change. These people will come from the ranks of both "teachers" and "trainers" as well as other groups, including those involved in the broad field of human resource development. Nevertheless it is pertinent here to make some comment on the needs of teachers moving into workplace based vocational education and training.

One of the implications of the integrated model is the necessity for teachers to move from the relatively comfortable role of teaching their own subject, into a role which explores how their expertise may apply within the context of the workplace. What counts in the workplace is not so much the teacher's expertise in their particular discipline (eg. "English") but rather the teacher's capacity to see how his or her particular understandings and expertise may be used to support effective workplace learning and change. Workplace teachers need to be experts in applied adult learning.

In the case of language and literacy learning for instance, the teacher needs to tune into the language and literacy of the workplace and then determine how this may be best utilised and developed in the interests of the learners. The teacher must come to grips with the discourse intrinsic to the workplace. It is the way this discourse is accessed, and the way learners develop their use of this discourse (rather than preconceived notions of proper English) which will determine the effectiveness of the program.

This suggests that many teachers will need considerable preparation and support to move into the unfamiliar and relatively uncomfortable role which sets substantial areas of their traditional expertise aside. The new role requires the teacher to work from the workplace context to help learners develop those skills and attributes which will best enhance their own independence as individuals, whilst simultaneously addressing the need for competencies required within the workplace. This project has shown how these needs can be reconciled.

Recommendation

14. That higher education and teacher training providers address the need for practical and experiential professional development programs which:

  14.1 incorporate the key principles, conceptual framework and strategies implicit in the integrated model and address the needs of teachers in assessing and documenting workplace performance in relation to industry and other competencies.

  14.2 will enable teachers to develop skills in collaborative curriculum development and the facilitation of integrated training.

15. That preservice teacher education programs address the needs of prospective teachers seeking employment in the field of adult and vocational education and training.

15.8 Further Research

Results from this research have uncovered a number of other areas of workplace learning that need to be researched. Many educationalists have a negative view of the language and discourse of the workplace, seeing it as reductionist and lacking in legitimacy because of the limited range within which it appears to operate. This denies the reality of the workplace. There is an urgent need for research which focuses upon discourse analysis within different workplace settings. Such research would help to reveal the nature of the language of the workplace with its technical complexities and idiosyncrasies as well as the common usages of words and the existing workplace communication strategies and networks.

There is also a need for research which is ethnographic in nature, that is research which "writes the culture" of the workplace in rich descriptive ways. Such research would provide insights into how workplace communication systems really work, not simply in linguistic terms, but in terms of the aims, aspirations, beliefs and understandings of the people involved.

Similarly, as can be seen from the case studies, the numeracy of the workplace is often at a quite sophisticated, though specialist level. Thus requirements of employees in this field are quite high in some areas of mathematical knowledge and reasoning, but narrow in the sense of the field as a whole. There is a need for a critical analysis of the mathematics that is to be found in workplaces.

In a broader context, the links between training and workplace change and the importance of a supportive learning environment in the workplace have been noted in this project. If there is a serious commitment in Australia to the workplace reform agenda, and it is considered important to develop a clever country where working smarter rather than harder is a goal, then training needs to fulfil its role within this context.

There is a need for further research into the effectiveness of training strategies that have been taken for granted for some time, but which are not necessarily obtaining the desired results, either for employees or employers. The issue of training as part of a wider agenda means that the links between training and change, training and the development of a learning environment, training and productivity, and so on, need to be researched. There is a need for a detailed understanding of the way these links operate, or fail, within the context of workplace training initiatives. With such an understanding training can be better developed to ensure the desired outcomes.

Recommendation

16. That research funding bodies and higher education authorities support research in vocational education and training which provides a critical analysis of:

- **16.1 workplace discourse, communications and culture;**
- **16.2 workplace learning, training and change processes;**
- **16.3 the numeracy and mathematical processes implicit in workplace discourse and practices;**
- **16.4 the impact of conventional modular training packages on workplace processes, practices and culture.**

Finally it would be valuable to conduct follow up research with the enterprises involved in this project. As was noted in several of the case studies, whilst there was evidence that the training was making a difference, there was also a sense that insufficient time had passed to fully judge the impact of the training. The processes of changing culture and attitudes in the workplace take time to work. Follow up studies, with observations and interviews after a period of 12-18 months would allow more informed judgements to be made about the effects of this model.

Recommendation

17. **That follow up studies be conducted with the enterprises involved in these case studies to determine whether the effects of the integrated training are apparent after a period of 18 months.**

15.9 Post Script on the Project

The fundamental purpose of action research is to inform practice. This type of research is not abstract, nor purely theoretical. It engages with the sometimes messy and contradictory realities of the world. It attempts to make better sense of the world and to find better ways. This project has pointed the way for new approaches in vocational education and training. It has highlighted some of the inadequacies in orthodox approaches, it challenges some conventionally held views.

The experience of this project suggests the enormous potential for workplace learning initiatives which are able to engage with the real culture, language, and practices of the workplace and negotiate learning outcomes which address the needs of both learners and other stakeholders with an interest in the program. The integrated model conceives the "customer" for training as the enterprise, with all of its interested parties.

The development of the integrated model through this action research has not taken place in isolation from other developments in the industry. Rather it can be seen as part of an industry wide integrated career structure that is still evolving in various ways, at the enterprise level and across the industry as a whole. Several enterprises see the integrated model as an important factor in the development of career pathways and have adopted key aspects of the model for wider application in their training and career structures.

Nissan NPDC has continued its training program, and extended it to the entire VIC, based upon the model demonstrated in the pilot program. At Toyota, where the pilot program was conducted in the Press Shop, the integrated model has also been applied to training in the warehouse. At HEC the same teachers are extending the integrated approach to training into new areas. In another project, not documented in this report, a component manufacturer has adopted the integrated approach in a program simultaneously providing accredited training and addressing issues of continuous improvement in the factory. As with the pilot projects described in this report, the curriculum is being developed collaboratively, from the shop floor, with the involvement and support of all the stakeholders. The vehicle division of the union (AFMEU) has also adopted the integrated model for its training of shop-stewards.

In various ways, direct and indirect, the experience of this project has helped to shape the practice of vocational education and training and to stimulate the search for more effective ways of meeting the needs of employees, enterprises and the industry.

Acknowledgements

Undertaking this large action research project would not have been possible without the considerable support from the companies who participated in the pilot programs and the union. Specifically we would like to thank the following organisations for their participation:

* Holden's Engine Company
* Ford Motor Company of Australia Ltd.
* Mitsubishi Motors Australia Ltd.
* Toyota Motor Corporation Australia Ltd.
* Mercedes-Benz (Australia) Pty. Ltd.
* Nissan Australia
* Automotive, Food, Metals and Engineering Union (Vehicle Division)

The following pages lists the large number of people in each site who assisted the project officers in the conduct of the project. Our thanks also go to each and all of these people, and in particular to the participants in the various pilot programs

The editorial team would like to acknowledge the NALLCU Project Management Committee for their guidance and support and their helpful and critical readings of the draft document.

In addition we would like to thank the many outside people who have demonstrated interest and given support to the program, in many cases visiting classrooms, observing presentations, participating in class activities and/or offering suggestions. In particular we would like to mention the assistance and support given by:

Professor John Pollock, RMIT
Dr Terri Seddon, Monash University
Dr Darrel Caulley, La Trobe University

Special mention needs to be made of the project officers without whom it would not have been possible, and whose blood, sweat and tears helped produce the case studies. We thank you for your hard dedication, enthusiasm and professional approach.

To the participants in the program - you made it all worth while. Thank you for taking part. We hope you enjoyed it too!

Finally, special thanks to Helen Kalcovski for her patience and skill in desktop publishing.

Robin Sefton Peter Waterhouse Rosemary Deakin

Holdens Engine Company

The project would not have been possible without the extraordinary support and practical assistance of staff and employees in the Foundry, other HEC staff and individuals and organisations outside the company.

We would like to thank and acknowledge the following people/organisations who contributed and participated in various ways.

Jane Sims, Terry Klass, Rosemary Deakin

HEC Staff

John Marks
Bryan Bardwell
Sakim Boyaci
Alan Bucci
John Herron
Ray Jenkin
Ian Marr
John Mullan
Peter Sewell
Jimmy Anastasakis
Denis Biasotto
Mick Cassidy
Paul Charky
John Chow
Milan Grah
Ron Griffiths
Don Morrison
Wolf Oppawsky
Nick Papadam
John Patten
Jim Penaluna
Peter Petrakis
George Pirotta
Barry Sponner
Rodney Watkins
John Zadunajski
Jarvis Jin
Jessie Villavicencio
Maria Farkas
David Woodroof
Ali Fathelbab
John Mrozowski
Douglas Virgin
Frank Schobben
Lisa Barbaroux
Lenny Colocca

HEC Foundry Employees

Goran Frajt
Gary Moore
Farid Botros
Van Nguyen
Ali Tutumlu
Lap Luu
Stan Atanasovski
Phuong Quach
Ray Lovell
Van Nguyen
Dragan Cvetkovic
David Thompson
Sebastian Coco
Mario Alibrando
Tu Yeung
Dimitrius Mavridis
Brad Webster
Mark Mifsud
Jim Newton
Ali Syed
Kerim Kursun
Andrew Bennion
Necmettin Yilmaz
Raymond Young
Steve Vella
Peter Lengyel
Odi Govendaris
Frank Vadnual
Liam Tram
Le, MA
Thom Sem
Frikri Bekkaya
Van Tran
Vi Bi Tan
Kadir Basyigit
Mustaffer Turan
Jordon Kiparoglou
Jack Smith
Lee Thanhi

RMIT
Wally Gore

AFMEU
Dave Smith

ILC
Maggie Gundert

CRA and Hammersly Iron Pty Ltd

National Automotive Language and Literacy Coordination Unit

Richard Cooney
Helen Kalcovski
Robin Sefton
Crina Virgona
Peter Waterhouse

Ford National Parts Distribution Centre

The work of the Project Team would not have been possible without the goodwill and support of a large number of people. The team would like to express their appreciation and acknowledge the following people who assisted in various ways.

Toni Roberts & Phillipa Thomas-Walsh

Participants

Madonna Arulanantham
Barry Bell
Nino Cavallaro
Tony Corbisieri
Maria Cuccaro
Bill Dowie
Jason Gibbard
Tony Kermidas
Robert Petrocchi
Colin Symes
Steve Vugdelija

NPDC Personnel

Robert Agg
Paul Albon
Barry Ashton
Duncan Barr
Mark Baldacchino
Hermon Baptiste
Frank Bayley
John Beveridge
Chris Brennan
Ben Cimeno
Tony Cox
Len De Kauwe
Clift De Wind
Andrew Dickinson
Bill Dingli
Claude Di Masi
Peter Ens
Gary Evans
Richard Farrugia
David Fox
Keith Fox
Peter Gooding
Joe Gribrok
Laurie Harnett
Wally Harris
Lynne Hart
Trevor Hollow
Frank Howard
Grahan Ince
Tony Italia
Tom Josevski
Rajesh Kapoor
John Kappadais
Mike Kent
Joe Mazzeo
Steve McLean
Colin Milburn
Colin Norona
Alan O'Halloran
Dennis Pace
George Pacewicz
David Palmer
Bill Papageorgiou
John Powell
Sharone Pritchard
John Ristic
Bob Romans
Assunta Sciulli
Ron Sharpe
Paul Smith
Phil Sophocleous
Bob Stewart
Paul Strotten
Roy Tate
Peter Taylor
George Vale
Chris Wilson
Lorraine Winfield
Brian Whitcher
Norm Whitten
Fred Whitworth
Monika Wood
Ross Woodhouse
Des Young
Renzo Zugaro

Dealers

City Ford
Courtney and Patterson

AFMEU

David Smith

National Automotive Language and Literacy Coordination Unit

Rosemary Deakin
Ann Eller
Helen Kalcovski
Robin Sefton
Crina Virgona
Peter Waterhouse

Nissan National Parts Distribution Centre

Many people have very generously given their time, their support, their ideas and their information in the writing of this course. I would like to thank them all, and I hope that everyone has been included.

Ann Eller

Nissan
Special thanks to Paul Willigenburg for his ongoing support, commitment and assistance, and also:

Leon Andrewartha
David Lloyd
Jim Mulholland
Tim Duncan
Roger Beruldsen
Geoff Pearce
Vic Collins
Kevin Perkins
Teck Lim
Chris Graham
Alan Barlow*
Fred Gage*
Helen Pateras
Maureen Tilley*
Marcel Dubuisson*
Peter Juricka*
Sue Pontin*
Jan Mangion*
David Segar*
Wilf Taylor*
Ray Ooi*
Neville Annand*
Robert Venuto*
Ray De Silva*
Wayne Osborne*
Pat Connell
Gavan George*
Pat St Ledger
Paul Hole
Chris Megas
Bindy Howell
Ross Stachwell*
Jenny Thomas*
Spiros Papoutsis*
Kim Wilson*
Bill Mardones
Kath Capron
Glen Wilson
Robbie Ingaliso
Bev Ball
Paul Davies
Cathy Ryal
Tony Taulealea*
Fred McBrian*
Gary Hudson
Clarke Sheppard*
Christina Miller*
Kathi Blake*
Alain Raypen*
Mike Timmins
Ivan Herft
Barbara Taulealea

* participants in pilot program

Automotive Supplier
Mark Adams and staff at Robert Bosch, Australia

Dealerships
David Gomm and staff at Berwick Nissan
Trevor Prendergast and staff at Moorabbin City Nissan
Craig Fyall and staff at Tony White Nissan
Daryl McGannon and staff at Blackburn Nissan
Geoff Nicholas and staff at Garry Rogers Nissan

AFMEU
Sarah Ross

Outer Eastern College of TAFE
Robert Yates

National Automotive Language and Literacy Coordination Unit
Rosemary Deakin
Helen Kalcovski
Robin Sefton
Toni Roberts
Crina Virgona
Peter Waterhouse

Toyota Motor Corporation Australia Ltd

The Project would not have been possible without the extraordinary support and practical assistance of staff and employees in the Altona Press Plant of the Toyota Motor Corporation of Australia.

We would like to acknowledge the following people who participate in various ways:

Richard Cooney & Julie Hawkey

Dennis Baldiccino
Serge Beani
Mark Butler
Lee Christodoulou
Romeo Claro
Terry Collison
Mario Cutrona
Megan Dew
John Egan
Ufuk Erin
Kevin Eurfurth
Nick Felton
Martin Fester
Scott Fraser
Carmel Galea
Phillip Hay
Liz Hunter
Danny Kasuban
Michael Lake
Quoc Ly
Jela Markovic
Chen Ng
Wally Ott
Aldo Pirrone
Chris Ponsford
Ian Quarrel
Joe Resto
Doug Rickarby
Martin Ritchie
Brian Robilliard
Lucy Russell
Ivan Slabjak
Bruce Smith
Steve Stogian
Victor Sultana
Rose Tamehana
Chris Wrigg

We would also like to acknowledge the contribution of the following people from other organisations:

AFMEU
David Smith

Western Metropolitan College of TAFE
Allan Ballagh Rodney Sparks

National Automotive Language and Literacy Coordination Unit
Rosemary Deakin Helen Kalcovski Robin Sefton Peter Waterhouse

Mercedes-Benz Australia Pty Ltd

The work of the Project Team at Mercedes-Benz would not have been possible without the support of many people. In addition to the members of the Project Steering Committee listed in the case study, the team would like to thank the following Mercedes-Benz employees for their contributions to the project.

Lynn Wallace-Clancy

Quality Inspection/ Forepersons

George Balsemin
Ernie Gugler
Mario Ibeas
Alan Robertson
Joseph Selir

Leading Hands

Trevor Fernando
Nadesan Nanthakumaran
Hit Van Trinh

Assemblers

Luis Alvarez
Bernadette Halder
Melanie Mckindley
Lan Nguyen
Cam Thai
Christine Zika

Mitsubishi Motors Australia Ltd

The project team would like to thank the following people for their advice, guidance and practical assistance to the project at Mitsubishi Australia Ltd.

Margie John, Phillip Anderson, Lynne Simmons

Management

Peter Romanowski
Ian Ward
Rick Wilson
Les McLeod
Ron Clayton
Scott Jeffrey
Bob Bolto
Andrew Pearson
Pat Barry
David Fries

Leading Hands

Chris Burden
Gary Carter
Sandy Cowan
Peter Defide
Bob Dowdon
Frank Enguita
Mick Ford
Steve Harem
Tom Taglegari
Brenton Waye-

AFMEU

John Fickling
Allan Matthews
Peter Scullion
Tommy Taylor
Grace Benvenuto
Paul McMahon

References

Allison, S., and Brennan, M. (1990) *Workplace Literacy; an annotated bibliography.* Centre for Teaching and Research in Literacy, Charles Sturt University - Riverina, Wagga Wagga.

Argyis, C. (1976) "Theories of action that inhibit individual learning" republished in Boud, D. and Walker, D. 1991 pp.43 - 59.

Automotive Industry Authority (1988)(1989)(1990)(1991)(1992)& (1993), *Report on the State of the Automotive Industry 1989, 1990, 1991, 1992, 1993, & 1994*, AGPS, Canberra.

Beach, R. & Hynds, S. (ed.) 1990 *Developing Discourse Practices in Adolescence and Adulthood*, Vol.XXXIV. Advances in Discourse Practices, ABLEX , Norwood, New Jersey.

Benson, C.S. (1993) "New Vocationalism in the US: Potential Problems and Outlook" in Hall, W.C. (ed.) (1993).

Berthoff, A.E. (1990) "Paulo Freire's Liberation Pedagogy" in *Language Arts*, Vol. 67., No.4. April.

Bogdan, R.C. & Biklen, S.K. (1982) *Qualitative research for education: An introduction to theory and methods*, Allyn and Bacon, Boston.

Boud, D., and Walker, D. (1991) *Experience and Learning: reflection at work.* Deakin University, Geelong.

Boud, D. & Griffin, V. (Eds.) (1987) *Appreciating Adults Learning: From the Learner's Perspective*, Kogan Page, London.

Boomer, G. (1982) *Negotiating the Curriculum*, Ashton-Scholastic, Sydney

Boomer, G. (1988) "Negotiation Revisited" in *Metaphors and Meanings: Essays in English Teaching* (Ed.) Green, B. Australian Association for Teachers of English, Melbourne.

Bradshaw, D. (1993) "Signs of the Times" keynote address, VALBEC Conference, Deakin University, Melbourne, reprinted in *Fine Print*, Spring.

Brice-Heath, S. (1986) "The functions and uses of literacy" in de Castell, S., Luke, A. and Egan, K. (eds) *Literacy, Society and Schooling: A Reader*, Cambridge University Press, Cambridge. pp.15-26

Brice-Heath, S. (1990) (first publ. 1983) *Ways With Words: language, life, and work in communities and classrooms* Cambridge University Press, Cambridge.

Brookefield, S. (1985) "A Critical Definition of Adult Education" in *Adult Education Quarterly*, Vol.36., No.1. pp.44-49 reprinted in Watkins, K. 1991

Brookefield, S. (1986) *Understanding and Facilitating Adult Learning*, Jossey Bass, San Fransico.

Brookefield, S. (1987) *Developing Critical Thinkers: challenging adults to explore alternative ways of thinking and acting*, Open University Press, Stratford.

Brown, M. (1991) "Competency Based Training: Skill formation for the workplace or classroom Taylorism?" A.C.S.A. Conference Paper, Adelaide, July.

Brown, M. (1992) "A Proposal for Dynamic Course Development: the Corkscrew Curriculum - Education & the Reconstructed Workplace" an unpublished working paper for discussion, Faculty of Education, Deakin University, Geelong.

Brown, M. (1992) "Adult learning in the context of the changing workplace" an unpublished working paper for discussion, Faculty of Education, Deakin University, Geelong.

Calkins, L.M. (1986) *The Art of Teaching Writing*, Heinemann, Portmouth, N.H.

Cambourne, B. (1988) *The Whole Story*, Ashton Scholastic, Aukland.

Cambourne, B. (1991) "Ideology and the Literacy Curriculum: the teaching of phonics" a paper prepared for the Australian Reading Association's National Conference, Adelaide.

Cambourne, B. & Turbill, J. (1991) "Evaluation and the Literacy Curriculum: Who is in Control?" in *Australian Journal of Reading*, Vol.14., No.3. September.

Campbell, B. (1991) *More Than Life Itself: a handbook for tutors of adult literacy*, Victorian Adult Literacy and Basic Education Council, Melbourne.

Carmichael, L. (1990) "Here comes the industrial revolution, again." Edited version of Beanland Memorial Lecture delivered at Footscray Institute of Technology, Melbourne, in Award *Restructuring : Resource Package for TAFE Teachers*, Dept. of TAFE & Dept. of Industrial Relations, New South Wales.

Caswell, T. (1990) "Response to Long" ("Workforce Perceptions of Literacy and Multi-Skilling Issues.") in *Open Letter: Australian Journal for Adult Literacy Research and Practice* Vol. 1 No.1

Caulley, D. (1993) "Overview of Approaches to Program Evaluation: The Five generations" in Guthrie, J. (ed) 1993 *Australian Public Sector: Pathways to Change in the 1990's*, I.I.R. Conferences Pty. Ltd., North Sydney.

Caulley, D. (1992) "The Basic Characteristics of Postpositivist Interpretive Inquiry", unpublished M.Ed. class notes, School of Education, La Trobe University, Melbourne.

Chi, A.T.H., Feltovich, P.J. & Glaser, R. (1981) "Categorisation and Representation of Physics Problems by Experts and Novices", *Cognitive Science*, 5.

Christie, F. (Ed.) (1990) *Literacy for a Changing World*, Australian Council for Educational

Research, Hawthorn, Victoria.

Clarke, M.A. (1989) "Negotiating Agendas: Preliminary Considerations" in *Language Arts*, Vol.66., No.4. April.

Collins, M. (1991) *Adult Education as Vocation: A critical role for the adult educator*, Routledge, London and New York.

Cooney, R. (1993) "Learning from Experience in the Integrated Curriculum" in *Critical Forum* Vol. 2, No. 2.

Dawkins, J. (1991) *Australia's Language: The Australian Language and Literacy Policy and the Companion Volume to Policy Information Paper*, AGPS, Canberra.

Dawson, P. (1991) "Flexible Workcells: Teamwork and Group Technology on the Shopfloor", a paper for Aston/UMIST Labour Process Conference, University of Manchester.

DEET (1988) *Good Practice in Australian Adult Literacy and Basic Education*, October, Canberra.

Department of Employment Education and Training (DEET) (1990a) "What does literacy mean in the workplace?" from *An Equal Chance: Literacy in your workplace*. Workplace Literacy Kit produced by International Literacy Year (ILY) Secretariat, Canberra, 1990.

DEET (1990b) "Literacy Training: The key to long-term productivity" in *Literacy Training: The key to long-term productivity* Workplace Literacy Kit produced by ILY Secretariat, Canberra.

DEET (1991) *Literacy and Industry: Partners in Productivity* papers from the National Literacy in Industry Conferences, Sydney & Melbourne, ILY Secretariat, Canberra.

DEET (1992) *Good Practice in Australian Adult Literacy and Basic Education*, Canberra, December.

Department of Industrial Relations (DIR) & Australian Manufacturing Council (AMC) (1992) *International Best Practice: Report of the Overseas Study Mission*, Commonwealth of Australia

Edelsky, C. (1991) *With Literacy and Justice for All*, The Falmer Press, London.

Edelsky, C. (1992) "A Talk with Carole Edelsky About Politics and Literacy" in *Language Arts*, Vol.69, September, pp.324-329

Edgar, D. (1992) "Feeding the Fires of Competence" in *Education Quarterly*, No.6. June.

Elbow, P. (1973) *Writing Without Teachers*, Oxford University Press, London.

Elbow, P. (1981) *Writing With Power: Techniques for Mastering the Writing Process*, Oxford University Press, Oxford.

Elias, K. (1990) "Evaluating a Workplace Basic Education Course" in *Good Practice in Adult*

Literacy No.7. March p.13

Emig, J. (1983) *The Web of Meaning: essays on writing, teaching, learning and thinking*, Boynton/Cook Publishers Inc., New Jersey.

Ennis, R. & Davidson, D. (n.d. but believed to be 1989) *A Life of Its Own: adult literacy work in a small group*, Council of Adult Education, Melbourne.

Ennis, R. and Earl, N. (1990) *Learning in Groups: a resource for adult basic education, Council of Adult Education*, Melbourne.

Fegent, I. (1993) *Language and Literacy Issues in CBT Assessment*, NCVER, Adelaide.

Field, L. (1990) *Skilling Australia: A Handbook for Trainers and TAFE Teachers*, Longman Cheshire, Melbourne.

Ford, G.W. (1990) *Rethinking Skilling for a Restructured Workplace: Occasional Paper*, Commision for the Future, AGPS, Canberra.

Fox, M. (1987) "Notes from the Battlefield: towards a theory of why people write", paper presented at the 5th. Invitation Riverina Literacy Conference, Wagga Wagga, New South Wales.

Fox, M. (1993) "What we do to language and what language does to us" in *Literacy for the New Millenium: Conference Papers* Australian Reading Association, 1st International and 19th National Conference, Melbourne

Francis, R. (1990) "The Challenge of Workplace Basic Education." in *Australian Journal of Reading*, Vol. 13, No. 1, March pp 31 - 40.

Freebody, P. & Luke, A. (1990) "'Literacies' Programs:Debates and Demands in Cultural Context" in *Prospect*, Vol.5., No.3. May, pp. 7-27.

Freire, P. (1977a) (first publ.1972) *Pedagogy of the Oppressed*, Penguin Books, Ringwood, Victoria.

Freire, P. (1977b) (first publ.1970) *Cultural Action for Freedom*, Penguin Books, Ringwood, Victoria.

Gee, J.P. (1990) *Social Linguistics and Literacies: Ideology in Discourses*, The Falmer Press.

Gee, J.P. (1994) *Quality, Science and the Lifeworld: The Alignment of Business and Education*, Occasional Paper No. 4, Adult Literacy & Basic Skills Action Coalition, Leichardt, N.S.W.

Gonczi, A. (Ed.) (1992) *Developing A Competent Workforce: adult learning strategies for vocational educators and trainers*, National Centre for Vocational Education Research, Adelaide.

Goodman, Y. Watson, D, & Burke, C.L. (1987) *Reading Miscue Inventory: alternative procedures*, Richard Owen Pub.

Gowen, S.G. (1993) "beiefs about literacy: measuring women into silence/hearing women into speech" in *Critical Forum* Vol. 2, No. 3, December.

Grant, A. (1985) "Learning from the Life Stories of Adult Literacy Students" in *Readings in Adult Basic Education*, Australian Council for Adult Literacy, Melbourne.

Grant, A.N. et. al. (1990) (in press) *Adults Learning Literacy in Groups: A national level research project funded by the National Policy on Languages Adult Literacy Action Campaign*, unpublished draft of Initial Research Report, La Trobe University, Melbourne.

Grant, A.N. & Treloar, A. (1988) "Doing Case Study Research" in *Literacy for Living: Conference Papers*, Australian Council for Adult Literacy, 12th. National Conference, Brisbane.

Graves, D. (1983), *Writing: Teachers and Children at Work*, Heinemann, London

Greenwood, D.J., Whyte, W.F., & Harkavy, I. (1993) "Participatory Action Research as a Process and as a Goal" in *Human Relations*, Vol.46., No.2., p.177, Plenum Publishing, New York.

Griffin, P. and Forwood, A. (1991) *Adult Literacy and Numeracy Competency Scales*, The Assessment Research Centre, Phillip Institute of Technology, Coburg, Victoria.

Gribble, H. (1990) "Resisting Hijack and Seduction: dangers and delights in award restructure for adult literacy and basic education" in *Fine Print* Vol.12., No.2. June and in *Literacy Exchange*, No. 2: 41-55.

Gribble, H. (1991) "Five Challenges to Conventional Thinking About Adult Literacy and Productivity" in DEET 1991, pp. 25-26

Grubb, W.N., Davis, G., Lum, J., Phihal, J. & Morgaine (1991) *The Cunning Hand, The Cultured Mind: Models for Integrating Vocational and Academic Education*, Berkely, California: National Centre for Research in Vocational Education.

Hall, W.C. (1993) *What Future for Technical and Vocational Education and Training?*, NCVER, Adelaide.

Hall, W.C. (1994) *Review of Research: Competency Based Training and Assessment*, National Centre for Vocational Education Research, Adelaide.

Hartley, R. (1989) *The Social Costs of Inadequate Literacy: A report for International Literay Year*, Australian Institute of Family Studies, Australian Government Publishing Service, Canberra.

Harman, S. & Edelsky, C. (1989) "The Risks of Whole Language Literacy: Alienation and Connection" in *Language Arts*, Vol. 66, No.4. April. (revised and republished in Edelsky,C. 1991.)

Harste, J. (1993) "Curriculum for the Millenium: Putting an Edge on Learning Through Inquiry" in *Literacy for the New Millenium: Conference Papers*, Australian Reading Association 1st

International and 19th National Conference. Melbourne.

Harste, J. Woodward, J. & Burke, C. (1984) *Language Stories & Literacy Lessons*, Heinemann, Portsmouth, N.H.

Hill, E. (1990) *Migrant Workers and Award Restructuring,* Office of Multicultural Affairs, Department of the Prime Minister and Cabinet, Canberra.

Horsman, J. (n.d.) "The Social Dimension of Literacy" in *Canadian Woman Studies*, Vol.9 No. 3 & 4. pp.78-81

Horsman, J. (1990) *Something in My Mind Besides the Everyday*. Women's Press, Toronto.

House of Representatives Standing Committee on Employment, Education and Training (1991), *Words at Work: A Report on Literacy Needs in the Workplace*. AGPS. Canberra.

Hull, G. (1993) "Hearing other voices: a critical assessment of popular views on literacy and work" in *Harvard Education Review*. Vol. 63, No. 1, Spring.

Johnson, D.W. & Johnson, F. (1991) *Joining Together: Group Theory and Group Skills*. Allyn and Bacon, Sydney, pp. 395 - 401

Jones, D. Womack, J., & Roos, D. (1990) *The Machine That Changed the World*, Rawson associates, New York.

Kalantzis, M. (1993) "The State of Pedagogy" keynote address. VALBEC Conference, Deakin University, Melbourne, reprinted in Fine Print, Spring.

Kazemak, C. & Kazemak, F. (1992) "Systems Theory: A Way of Looking at Adult Literacy Education" in *Convergence*, Vol.XXV, No.3.

Kearney, P. (1992) *Collaborative Assessment Techniques: for competency based training and enterprise learning*. Artemis Publishing, Hobart.

Kelly, G. (1955) *The Psychology of Personal Constructs: Volume One. A Theory of Personality.* Norton & Co., New York.

Kemmis, S. & McTaggart, R. (1988) *The Action Research Planner* Deakin University Press, Geelong.

Knowles, M. (1990) (first publ. 1973) *The Adult Learner: a neglected species*. (4th. edition) Gulf Publishing Co., Houston.

Kofman, F. & Senge, P.M. (n.d) "Communities of Commitment: The Heart of Learning Organisations" in *Organisational Dynamics*

Kolb, D. (1984) *Experiential Learning*, Prentice hall, Englewood Cliffs, NJ.

Kress, G. (1985) *Linguistic Processes in Sociocultural Practice*, Deakin University Press, Geelong.

Lankshear, C. (1991) "Getting it right is hard: redressing the politics of literacy in the 1990's" in Cormack, P. (ed) *Literacy: Making it explicit Making it possible* Selected papers from the 16th. Australian Reading Association Conference, Adelaide, July, pp.209-228

Lankshear, C. (1994) *Critical Literacy* Occasional Paper No. 3, Australian Curriculum Studies Association Inc., ACT.

Lankshear, C. (1993) "Reclaiming Empowerment and Rethinking the Past" paper presented at Australian Reading Association Conference, Melbourne.

Lather, P. (1991) *Feminist Research in Education: Within/Against*, Deakin University, Geelong.

Lauer-Ernst,U. (1993) "Learning within a work context: Training Concepts, Experience, Development" in Hall, W.C. (ed) (1993).

Levine, K. (1986) *The Social Context of Literacy*, Routledge & Kegan Paul, London.

Lincoln, Y.S. & Guba, E.G. (1985) *Naturalistic Inquiry*, Sage Publ. Inc., Beverley Hills, Cal.

Lincoln, Y.S. & Guba, E.G. (1990) "Can There Be A Human Science; Constructivism as an Alternative" in *Person Centred Review*, Vol. 5. No.2. Sage Publ. Inc. May, pp.130-154.

Little, D., McAllister, J. & Priebe, R. (1991) *Adult Learning in Vocational Education*, Deakin University Press, Geelong.

Littler, C. (1989), "Debates over new technology, new production concepts and restructuring" in editorial introduction, *Labour & Industry*, Vol 2, No. 2.

Long, P. (1990) "Workforce Perceptions of Literacy and Multi-Skilling Issues." in *Open Letter: Australian Journal for Adult Literacy Research and Practice* Vol.1 No.1 pp. 18 - 29.

Luke, A. (1991) "Critical research on textbooks and literacy" in *Australian Journal of Reading*, Vol.14, No.2, June, pp. 88-95.

Luke, A. (1992) "When Basic Skills and Information Processing Just Aren't Enough: Rethinking Reading in New Times" AJA Nelson address, Australian Council for Adult Literacy, National Conference, October, Sydney.

Luke, A. (1992) "Literacy and Work in 'New times'", in *Open Letter: Australian Journal for Adult Literacy Research and Practice*, Vol.3, No.1, Curtin University of Technology, Perth and Deakin University, Geelong.

Lytle, S. & Schultz, K. (1990) "Assessing Literacy Learning with Adults: an ideological approach" in Beach, R & Hynds, S. (ed.) *Developing Discourse Practices in Adolescence and Adulthood*.

McCormack, R. (1991) "Framing the Field: Adult Literacies and the Future" in Vol.2. Christie, F. et.al. *Teaching English Literacy*

McCormack, R. (1993) "ABE - Everywhere and Nowhere?" in *ARIS Bulletin*, Vol.4. No.1., Adult Community & Further Education Board, Melbourne.

Mace, J. (1992) *Talking About Literacy: Principles & Practice of Adult Literacy Education*, Routledge, London.

McKavanagh, C.W. (1992), "Skill Formation for the Workplace" in Poole, M. (ed) *Education and Work*, Hawthorn, Vic: Australian Council for Educational Research.

Mathews, J. (1989) *Tools of change: new technology and the democratisation of work*, Pluto Press, Sydney.

Maushart, S. (1991) "The Future of Literacy" in *Open Letter: Australian Journal for Adult Literacy Research and Practice*, Vol.2. No.2. Curtin University, Perth.

Mawer, G. (1992) "Developing New Competencies for workplace Education" in Prospect, Vol.7., No.2. January, p.7-27

Mayer Committee (1992) *Employment-Related Key Competencies: A Proposal for Consultation.*

Meek, M. (1983) *Achieving Literacy*, Routledge & Kegan Paul, London.

Meek, M. (1991) *On Being Literate*, The Bodley Head, London.

Meyer, T. (1991) "Post-Fordist Ideologies and Education" in *Melbourne Studies in Education*, La Trobe University Press, Melbourne

Mezirow, J. (1981) "A Critical Theory of Adult Learning & Education" in *Adult Education*, Vol.32, No.1. pp.3-24

Mikulecky, L., et al. (1987) "Training for Job Literacy Demands" in *EEE706 Literacies and the Workplace*. Deakin University, Geelong.

Moran, T. (1991) "Education vs training: the false debate" in *Education Victoria*, July, Ministry of Education, Melbourne.

Murray, D. (1968) *A Writer Teaches Writing: A practical method of teaching composition.*, Houghton Mifflin Company, Boston.

Moore, H. (1991) "Enchantments and Displacements: Multiculturalism, Language Policy and Dawkins-speak" in *Melbourne Studies in Education*, La Trobe University Press, Bundoora.

Neville, B. (1993) "Researching Good Practice" preparatory paper presented to Colloquium on Qualitative Research in Adult Education, Melbourne.

Neville, B. (1994) "Teaching and Transformation", paper delivered at the annual LaTrobe University Summer School for Adult Literacy and Basic Education Practitioners, February.

Nunan, D. (1988) *The Learner Centred Curriculum*, Cambridge University Press, London.

Nunan, D. (1992) *Collaborative Language Learning and Teaching*, Cambridge University Press, London.

O'Connor, P. (1990) "Workplace Basic Education - Aims & Definitions. from *Skills at Work. A guide to the provision of workplace basic education.* NSW Adult Literacy Council.

O'Connor,P. (1990) "Some Costs and Options in the Provision of Workplace Basic Education Programs." in *Cost Implications for Workplace Basic Education* Workplace Basic Education Resource Project, Redfern, NSW.

O'Connor, P. (1991) "Staff Training and Workplace Basic Education." in *CATALPA Bulletin* 2. University of Technology, Sydney.

O'Connor, P. (1992) "Choosing sides in Workers' Literacy" in *Critical Forum,* Vol.1., No.2. September.

O'Connor, P. (1993a) "Negotiating Out of Neutral in Workers Literacy" in *Critical Forum*, Vol.2, No.3, December.

O'Connor, P. (1993b) *ALBSAC News,* No. 5, September.

Pea, R.D. (1987) "Socialising the Knowledge Transfer Problem", *International Journal of Educational Research.*

Perkins, d.N. & Salomon, G. (1989) "Are Cognitive Skills Context Bound?" *Educational Researcher,* January-February.

Raff, D. (1987) "Wage Determination Theory and the Five Dollar Day at Ford," Ph.D. dissertation, Massachusetts Institute of Technology.

Piore, M. & C. Sabel (1984) *The Second Industrial Divide: Possibilities for Prosperity,* Basic Books, New York.

Reason , P. & Heron, J. (1986) "Research With People: The Paradigm of Cooperative Experiential Inquiry" in Person Centred Review, Vol.1. No.4., Sage Publ.Inc. November, pp. 456 -476

Rogers, C. (1985) *Freedom to Learn in the 80's*, Charles E. Merrill Pub. Co., Columbus, Ohio.

Salmon, P. (1990) "Personal Stances in Learning" in Warner-Weil, S. & McGill, I (Eds) 1989.

Salmon, P. (1988), *Psychology for Teachers:an alternative approach*, Hutchinson, London.

Schon, D. (1987) *Educating the Reflective Practitioner*, Jossey-Bass Inc., San Francisco.

Scott, G. (n.d.) *Managing Change in TAFE and Adult Education.* unpublished monograph, Institute of Technical and Adult Teacher Education, Sydney College of advanced Education, Sydney.

Scott, G. (1991) "Competence and Workplace Basic Education" in *CATALPA Bulletin*, Vol.1. No.1. University of Technology, Sydney, and La Trobe University, Melbourne.

Scott, G. (1991) "How Clever Are We In The Way We Train Our Workers: The Great Australian Competence Caper" in *Training and Development in Australia*, Vol.18. No.2., June

Sefton, R. & O'Hara, L. (1992) *Report of Workplaced Education Project*. Victorian Automotive Industry Training Board, Melbourne.

Sefton, R. (1992) "Bottom Line Training" in *Education Links*, No. 44, Summer, Melbourne.

Sefton, R. (1993) "An Integrated Approach to Training in the Vehicle Manufacturing Industry in Australia" in *Critical Forum* Vol. 2 No.2.

Senge, P. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organisation*, Double Day , New York.

Shore, S. (1991) "A Teachers Questions in an Adult Literacy Classroom: possibilities for dialogue" unpublished M.Ed. thesis, University of south Australia, Adelaide.

Shore, S. (1993) "Professional development needs of ALBE teachers working in changing contexts" paper presented to 5th. Annual Summer School in Professional Development for Adult Literacy and Basic Education Workers, School of Education, La Trobe University, Melbourne.

Shore, S., Black, A., Simpson, A., & Coombe, M. (1993) *Positively Different: guidance for developing inclusive adult literacy, language and numeracy curricula.*, Department of Employment, Education & Training, Canberra.

Smith, F. (1973) *Psycholinguistics and Reading*, Holt, Rinehart and Winston, New York.

Smith, F. (1978) *Understanding reading: a psycholinguistic analysis of reading and learning to read.* 2nd. edition, Holt, Rinehart and Winston, New York.

Smith, F. (1982) *Writing and the Writer*, Heinemann Educational Books, London.

Smith, F. (1988) *Joining the Literacy Club: Further Essays into Education.* Heinemann Educational Books, London.

Smith, F. (1988) *Insult to Intelligence: the bureaucratic invasion of our classrooms*, Heinemann, Portsmouth, N.H.

Smyth, J. (1994) "The Competence Approach to Teaching: Do We Need It In Its Current Form?" in *VATME Newsletter*, Victorian Association for Teachers of Migrant English, Melbourne.

Soden, R. (1993) "Vocational Education for a Thinking Workforce: A Vygotskian Perspective", *International Journal of Vocational Education and Training,* Vol. 1, No. 1.

Stevenson, J. (Ed.) (1994) *Cognition at Work: the development of vocational expertise*, National Centre for Vocational Education Research, Adelaide.

Stockley, D. (ed.) (1992) *Rationalising Education*, Melbourne Studies in Education, La Trobe University Press, Bundoora, Victoria.

Street, B. (1984) *Literacy in Theory and Practice*, Cambridge University Press, Cambridge.

Sreet, B. (1988) "Literacy Practices and Literacy Myths" in Saljo, R. (Ed.) *The Written World*, Springer series in Language and Communication, Vol.23. Springer Press.

Tough, A. (1979) *The Adults Learning Projects: A Fresh Approach to Theory and Practice in Adult Learning*, (2nd. edition), Ontario Institute for Studies in Education, Ontario.

Training Costs Review Committee, report of the (1990) *Training Costs of Award Restructuring*, volumes 1& 2, AGPS, Canberra.

Unterwerger, P. (1992) "Lean Production: Myth and Reality" I.M.F. Automotive Department, Occasional Paper.

Venesky, R., Wagner, D., and Ciliberti, B. (1990) *Toward Defining Literacy* International Reading Association, Newark.

Virgona, C. (1991) *Peer Tutoring: language and literacy training for NESB workers in industry.*, Adult Migrant Education Services, Melbourne.

Vygotsky, L.S. (1978) *Mind in Society*, Harvard University Press, Cambridge, Mass.

Walshe, R.D. (ed) (1981) *Donald Graves in Australia: children want to write*, Primary English Teaching Association, Rozelle, N.S.W.

Warner-Weil, S. & McGill, I. (Eds) (1989) *Making Sense of Experiential Learning: Diversity in Theory and Practice*, The Society for Research into Higher Education & Open University Press, Buckingham, UK.

Waterhouse, P. (1992) (in press) "Constructions, Conceptions and Perceptions: Contesting Literacy in the Workplace" in reader for Literacies & the Workplace, Deakin University, Geelong.

Waterhouse, p. (1994), "Industry Based Adult Educators in a Quality Circle", unpublished paper.

Watkins, K. (1991) *Facilitating Learning in the Workplace* , Deakin University, Geelong.

Wickert, R. (1989) *No Single Measure: A Survey of Australian Adult Literacy*. Commonwealth Department of Employment, Education and Training, Canberra.

Wickert, R. (1992) "Constructing Adult Illiteracy: Mythologies and Identities" in *Discourse* Vol. 12 No.2, April.

Willis, P. (1993) "Understanding and Promoting Good Practice in Adult Education for Human Development" preparatory paper presented to Colloquium on Qualitative Research in Adult Education, Melbourne.

Womack, James P., Daniel T. Jones, and Daniel Roos (1990) *The Machine That Changes The World: The Story of Lean Production*, Harper Perennial, USA.

Yeatman, A. (1991) "Corporate Managerialism: an Overview" paper presented to NSW Teachers' Federation Conference "The Management of Public Education: a question of balance" March 8-9, Sydney.

NAITB

This report documents the development and conduct of a series of pilot programs designed to support employee access, encourage successful participation and provide opportunities for language and literacy learning within the context of accredited training in the vehicle manufacturing industry. The emphasis was on involving people in active experiential workplace learning programs which would make a difference, both in the workplace, and in the lives of those involved. The evidence from the case studies demonstrates that they were successful at ***Breathing the Life into Training***.